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MIND

A QUARTERLY REVIEW

OF PSYCHOLOGY AND PHILOSOPHY.

EDITED BY
PROF. G. F. STOUT,

WITH THE CO-OPERATION OF PROFESSOR E. B. TITCHENER, AMERICAN EDITORIAL REPRESENTATIVE, AND OF PROFESSOR WARD, PROFESSOR PRINGLE-PATTISON, DAVID MORRISON, M.A., AND OTHER MEMBERS OF AN ADVISORY COMMITTEE.

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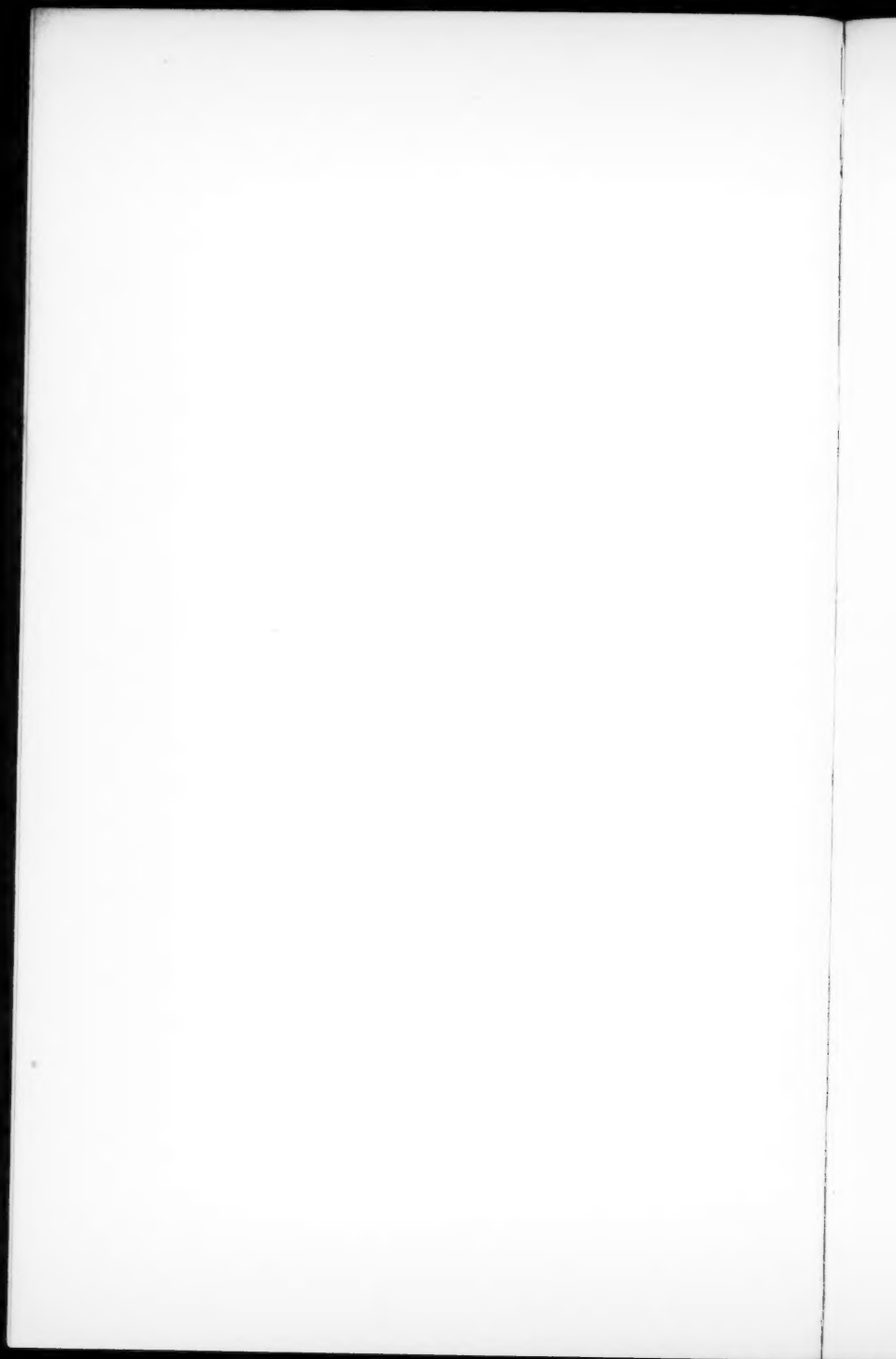
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MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—THE CONCEPT OF MIND-ENERGY.

BY H. WILDON CARR.

THE new book of Bergson entitled *Mind-Energy*, although a collection of Essays and Lectures, all of which have previously appeared in philosophical journals, is likely in one respect at least to rank among his most important works. It not only propounds to the student of philosophy a new concept of reality, a concept which identifies it with life and mind in the place of the old concept of something (it might be material or it might be spiritual) on which life and mind depend, and by which they are conditioned, but also it indicates as the corollary of that new concept a working principle of the highest scientific importance. In one of the studies in particular, it offers us an actual practical illustration of the application of this principle. I refer to the remarkable essay, which is really a scientific research on "Memory of the Present and False Recognition".

We are accustomed to think of psychology as the latest comer into the circle of the exact sciences, but there has arisen among us a new psychology of which the new psychologists of a very few years ago hardly dreamed, a science of unconscious mind. It threatens a complete revolution in our ordinary concepts of the mind and an entirely new basis for the science of it. I do not claim for Bergson that he is the discoverer or the pioneer of this science, but he was one of the first to feel the direction of the new science and to indicate the method of pursuing it, and his philosophical concept and principle are completely vindicated in its success.

In claiming for Bergson the discovery of a new concept I do not mean that the concept is new in the sense that it is

not to be found implicitly in his historical predecessors or generally in contemporary philosophy. I do mean that in his philosophy a concept of reality has found expression which completely alters the standpoint and direction of philosophical research and holds out the promise of a vast extension of knowledge, an extension into a domain which physical science has so far never attempted to conquer. In a word it opens the prospect of psychical science. The new concept is that life is identical with reality and that consciousness is identical with life. Now the great problem of the past has been to define the nature of consciousness, explain its genesis, and determine its relation to the external reality which conditions it. If we accept the new concept the problem of the future is to explain the nature and genesis of unconsciousness.

Let me illustrate what I mean by referring to what will probably be allowed to be the most original application of the concept—the theory of Creative Evolution. According to the generally accepted biological hypothesis, life appeared on our planet at first in an extremely simple and lowly form (whether it was a direct consequence of the growing complexity of molecular structure in certain forms of inert matter, or whether it was introduced entirely from without, is in the present state of our science uncertain). Once installed it has gone on producing new forms, each responding to the conditions of the environment by some special adaptation. Its highest achievement is the human brain with its accompaniment of self-conscious mind. There need be no dispute about facts. If we could be satisfied with description there would be no more to be said. The problem however which baffles the naturalist at every stage is to explain the driving force of evolution, to discover in the old, and therefore simpler, forms the efficient cause of new and highly specialised forms. The theories of natural selection, survival of the fittest, transmission by heredity of acquired characteristics, are helpful and valuable in their way, but entirely useless to throw light on the problem. Why is there growing complexity? Why does complexity of structure entail higher function? How from the simple can come the complex and from the less the more? Compare now the theory of Creative Evolution. According to this theory, life is consciousness by nature and in right. Consciousness is not something more than life, an acquisition or addition to it. Let us leave out of account, as not affecting this question, Bergson's theory that matter is the inverse of life, in order to see his application of the concept of life to the biological problem as ordinarily understood. We have then as in the biological theory of evolution a first appearance of life on the

planet in a lowly form. Life in Bergson's view has humbled itself in order to insert itself. By what means has life, which is consciousness in right, achieved this lowly form which the initial effort required? By clothing itself, as it were, with unconsciousness, that is, by contriving artifices and mechanisms which inhibit consciousness. Of course this is expressed in anthropomorphic terms,—how else can we express any meaning? Once seize the concept, however, and we find we are possessed of a principle which really works. We can explain the evolution of life, or at least we can study its process and its progress, without the dissatisfaction which haunts us when we are conscious of a suppressed paradox and direct logical contradiction. According to the new concept, when some new form of activity is called for, requiring for its attainment some new mode of consciousness, the life impulsion has not to devise for its outlet some new construction of a definitely shaped matter, which in some mysterious way will acquire, by the new combination alone, some new function, a function distinct from anything implicit in the elements themselves,—all it has to do is to remove a shutter, alter or adapt a mechanism, admit to consciousness some part of life previously excluded, make the new form of activity unconscious of everything which might distract it from the new purpose. Evolution can proceed thus because consciousness and life are universal reality, an activity within which and of which we are centres formed to effect actions; because reality is not a static, inert sphere of activity, independent of us and limiting us; because in consciousness we are not aware of something opposed to us and independent; because, in short, mind is energy not stuff. It is our restriction to definitely formed actions which gives to nature its objective aspect.

From this concept of mind-energy there follows naturally a new concept of knowledge, and with it the problem of knowledge, as it has been presented throughout the controversy between realist and idealist, is completely transformed. It is clear that if we conceive life itself as reality, consciousness as identical with life, and unconsciousness as the positive means by which life brings about its concentration in individual acting centres, then discernment of an independent reality is meaningless, and the faculty of knowing cannot be a faculty of contemplating and discriminating alien existence. The problem of how we come to know an independent objective world of nature, and the sceptical dilemma in regard to it, disappear. A new but entirely different problem arises, and at least this new problem is not foredoomed to sterility

by the very terms in which it has to be stated. The new problem is to discover how and why the enduring, unceasingly acting, reality, life, is focussed in individual centres, and by what means and for what purpose the aspect of a reality essentially fluent is made to appear that of a static, immobile, alien, opposing reality. It hardly needs pointing out to anyone familiar with the direction of recent physics that this problem is not purely metaphysical; it has an important and intimate relation to physical science. I think the best way in which I can present this new concept and new working principle is by taking as the illustrative example of it Bergson's theory of perception and memory as expounded in his *Matière et Mémoire*.

The perception of objects is, according to this theory, a selection of images,—a selection effected by shutting out in unconscious oblivion the whole of reality unconcerned with the living actions we are performing, or rather with the kind of influence we exercise. The outline and boundaries of objects,—the things we perceive,—demarcate lines along which our present progressing action is forming. The selected images accordingly outline a certain eventuality of action. Selection of images does not mean that there is an act of the mind, such as some philosophers name the act of perceiving, which out of a variety of images actually present pays attention to some and disregards the rest. Neither does the term image mean that there are mental objects representative of real objects. Very different is Bergson's concept. In perceiving we are directly and immediately conscious or aware of reality, the images neither intercept our view nor mediate our view, they are constituted images by the selection, and the selection is determined by the form of our actions, and these by the needs, the range, and the mode of the activity.

This principle of selection interprets memory of the past as well as perception of the present. Memory is awareness of the past as present reality. The reality is past only in the sense that it is accomplished action. It is not past in the sense that it does not now exist. We carry it with us, it is what we are, our very selves, it is determined and also it is determining the form of our progressing coming action. The present loses all meaning if we cut it off from the past, because all reality is history, and history is making itself. The past is wholly existent in the present, it constitutes each individual experience, it constitutes the racial experience, it constitutes the evolution of life. It is with us always, an ever-present spiritual existence. It lies behind us and we

are unconscious of it, because life requires that our attitude be continuously, even strenuously, forward-looking. We are fixed in this attitude of attention to life. Nevertheless this very attention to life and the action it calls for requires the service of the past as well as its impulsion. At every moment of present perception the shutter is drawn aside according to the needs of the situation and then memory-images come to consciousness. They appear framed and with distinct outlines, but their sharpness and discontinuity and individuality are due to selection.

As in the selection of the perceived images, then, so also in the selection of the memory-images, unconsciousness and not consciousness is the active agent and plays the determining role. The reality is always present and we become conscious of it whenever the mechanisms of unconsciousness are relaxed or their working inhibited. The memory-image does not stand for the past or intercept our view of it, it is formed by selection. It is not a special kind of thing preserving the past, stored in the brain, as we might keep the photograph of a friend in a drawer, it is a vision of the past which is sweeping on with us in our present activity, vision made possible by removing a veil.

In the essay on "Memory of the Present and False Recognition," to which I have referred, we have an admirable example of the actual application of this concept and principle to a definite, ultra-scientific, psychological problem. Recognition offers one of the most obstinate problems in epistemology as everyone familiar with the history of theory of knowledge knows. In a sense indeed the whole of theory of knowledge is concentrated in it, and could we propose a really satisfactory solution of the problem of recognition one chapter in the history of philosophy would be closed. Recognition is what gives to present perceptual experience the feeling of familiarity which accompanies it whether it be routine or entirely novel. The feeling admits of varying degree, but were it entirely absent consciousness itself would disappear. Recognition, when we analyse it, seems a complex thing—the association of a present fact with a present idea of past fact. The association is not arbitrary as in constructive imagination but appears as dependent on some actual relation between the present fact and the past fact ideally present. The laws of the association of ideas have therefore occupied philosophers from the beginning of philosophy. They are supposed to rest fundamentally on the objective fact that there is resemblance between past sense experience and present sense experience, and on the subjective

fact that memory of past experience is retained in consciousness in an ideal form. Recognition therefore is generally regarded as an act of comparison comprehending a judgment so rapid that it enters consciousness as an immediate association. But what is common to every theory of association is the distinction between perception, which is fact, and memory, which is idea. We have, that is to say, perception of the present and memory of the past, and the opposite notions, perception of the past and memory of the present are a paradox. Both these paradoxical notions are declared by Bergson to be fact, and they are paradoxical only because we fail to understand what the past and the present are. But Bergson is not content to expose logical fallacies or to play with dialectic. Construction which is purely metaphysical is, he says, "usually a fragile thing" (*Mind-Energy*, p. 58). He is never satisfied with any theory unless he can bring to its elucidation some concrete fact of living experience. This is what he attempts to do in the essay to which I am referring.

The false recognition which is analysed is not a mistaken resemblance but a distinct phenomenon which has been described and verified and carefully recorded by psychologists, many of them medical practitioners. It is an abnormal phenomenon of mental pathology, in its very severe form it may be a symptom of on-coming insanity. The recorded cases, with full references, are given in the beginning of the essay. They are exhaustive up to the time when the essay was written, though doubtless there are many since. It is not an uncommon phenomenon, neither is it necessarily symptomatic. Many people can testify to having at some time experienced, generally very briefly and under exceptional conditions, something closely analogous. The phenomenon is that the patient seems to himself to be remembering what he is actually perceiving, so that he is bewildered with the feeling that he is going through what he has already gone through, that his present experience has nothing new in it, he knows it already. He feels that he has seen what he is seeing and not that he is seeing what he has formerly seen. He has memory of the present instead of the normal memory of the past. If Bergson had had no theory, if the ordinary concepts of perception and memory and the ordinary concept of reality on which they are based had not been suspect, he would probably have seen no more in this phenomenon than a more or less curious instance of a strange delusion. In the light of his new concept it became at once significant. Suppose our knowledge and its modes have been brought into being

by the needs of our activity, fashioned by the evolution of contrivances and mechanisms which canalise the impulse of life, then it will be in cases of derangement or miscarriage, where the mechanisms are out of gear, where the contrivances are breaking down, that we shall expect to find the significant facts which may give us a glimpse of their real purpose. It is here we must search and here we may find the opportunity at least to test our theory.

The argument of the essay is careful and long and I do not propose to follow it or to criticise it. Indeed in order to do that to any purpose one would have oneself to test cases. Its value to me is illustrative. If the new concept be true then the phenomenon is one which exactly accords with it. If the past exists in the ordinary and absolute meaning of the word; if we can say, "There it is" in the non-spatial meaning of the adverb; if our history or duration be one continuous living action making itself; and if at each moment of the progressing action something is being added to a past which is carried along in the action and belongs integrally to it; then it is clear that at each moment of living experience the memory-form as well as the perception-form of reality is being created by the mind. Now suppose that the normal attitude of the mind is to be straining forward, to be anticipating, and that this attitude is kept constant by means of a mental mechanism which automatically throws the past into oblivion, which brings about a continuous forgetting—a forgetting never absolute, for that would defeat the end, but delicately adjusted as an instrument of selection; then should we not expect that a first consequence of mental derangement or aberration would be a confusion of memory and perception? In Bergson's view we actually find this in the phenomenon of false recognition. The enfeeblement affects the attention to life and the first result is that the power of throwing the past into oblivion as it is created, or, to put it in objective form, the power of the progressing action to fall back and out of view, is deranged, the patient loses the sharp distinction between past and present, or even experiences the present as past.

The particular application of course may or may not be true. Even Bergson himself would claim for it no more than an approximation. What I am concerned to emphasise is the richness of the new concept and the utilisability of the new principle. First, then, let us see what is the fact in experience to which Bergson appeals as the ground of the new concept of reality. It is memory—not theory of memory, but the obstinate fact of existence which memory compels us to recognise. This fact of experience obliges us to substitute

duration for extension as the substance of things. Duration is fundamentally psychical. Only what is psychical endures. Translate duration into physical terms and it becomes transformed into time, into something which is not duration but a different thing, succession. Time in the sense of succession is a dimension spatially conceived, *i.e.*, it is not duration but extension. Extension is not absolute, it is purely relative to tension. Duration is absolute, it is the actuality of activity. It includes and conditions activity. Duration means that the past is present; that it is not non-existence; that it is not only present in the attenuated shape of more or less dim traces or recollections of what has been, but actually present as the very substance of activity, continued in and determining the forming action. It is the fact of memory which reveals the utter insufficiency of the old concept of a static reality. The concept of physical reality, of a matter occupying space and changing its relative position by the succession of its states in time is essentially discrete. Space and time as principles of continuity are external imposed conditions. In consciousness alone have we the pure fact of duration, and memory is a fact of consciousness. If the universe endures, it must mean that it is not an aggregate of discrete momentary existences, but that it lives; that its reality is not matter but history.

The old concept, then, was of a reality on which life and consciousness depend: the new concept is of a reality of which life and consciousness are modes. Modes are not dependent on reality but identical with it. The physical or material universe in the old concept is essentially inert, movement and change being something added to it or imposed upon it, constituting it a system of external relations. In the new concept reality is activity and matter is an aspect or view. The physical aspect of the universe with its appearance of independence is itself a result of the evolution of life. It is correlative to the mode of intellectual activity evolved in human nature. Let us see then how the fact of memory stands in regard to each concept.

According to the mechanistic view the physical universe is completely determined by the compensated actions and reactions which constitute it a system. This is expressed in the law of the conservation of energy. The present state of the universe is in this concept completely determined by the past, and every future state of the universe is implicit in the present, but only the present state actually exists. The fact of memory, to conform with such a concept, can only be explained by supposing that this material momentary universe retains in its present configuration the traces of its former

configuration, and that there is a mental faculty of using this property to represent ideally the past. The past in this case exists only in idea not in fact. According to the new concept, on the other hand, the past which we remember exists in fact, and in memory we are simply conscious or aware of what is as actual in its own right as the world we perceive. It is not in the existence or non-existence of their objects that memory and perception are different. In memory the acted past, in perception the progressing action, comes to consciousness. This actual existence of which in memory we are conscious is not material or physical but spiritual or psychical. It is psychical existence because in mind alone and not in matter is there true duration, *i.e.*, the existence of the past in the present.

This affirmation of an existence which is immaterial and yet actual is free from the ambiguity of the old idealism, which never succeeded in throwing off subjectivism. "The world is my idea" is a proposition no one can refute, but it carries no conviction simply because there is no passage to objectivity and therefore no basis for physical science. "The world is history making itself" may sound paradoxical to us under the spell of the old concept but it is not ambiguous and it is not self-stultifying. It affirms a reality which is psychical without being subjective. It declares that the substance as well as the efficiency of the objective world of nature is the acted past, existing in, not simply externally continuous with, the present. It is a concept from which scientific advance can be made. It is based on the fact of experience that the past of each individual is ever-present and ready to come to consciousness whenever the artifices which conceal it afford the means.

Such is the new concept of spiritual reality. Instead of matter and movement conceived as the conditions on which life and consciousness depend, we have history and evolution as the present existence of which definite forms of life and consciousness are modes. In the new concept, however, matter and movement are not nothing and they lose nothing of their claim to be real. What is denied is their claim to independent existence in abstraction from the whole. In the concrete activity, life, they are dispositions whose form is determined by a particular mode of conscious activity, the intellect.

The fact of memory when we grasp its full significance in the new concept transforms completely the problem, baffling from the standpoint of the old concept, of the relation of consciousness and life. I have spoken of them as conjoined—in the new theory they are identical. It is very important

to make this clear because it expresses the philosophical principle directive of a new science, the science of unconscious mind. The argument is that memory, if accepted as fact and not explained away by some theory of imprints or traces, implies that the fundamental reality is continuous not discrete. It is only living activity whose essential nature is continuity. When, then, life is conceived as itself the fundamental reality and not as something superposed on inert matter, unconsciousness ceases to be a pure negation, the simple absence which serves to distinguish the inert from the living. Unconsciousness and consciousness become strictly relative terms, both are modes of the life activity and it is unconsciousness which plays the active, consciousness which plays the passive, role. Thus, for example, when we fall asleep, unconsciousness is not the absence of consciousness in the sense of a break of continuity of consciousness, it is the cessation of a mode of activity. When we awake, consciousness does not return as an effort to revivify past impressions, it is simply the resumption of the activity which unconsciousness had suspended. Life is not an activity which may or may not acquire consciousness, it is identical with it. Unconsciousness represents its mode of concentration, or contraction, or tension, a mode necessary for its efficiency in action.

Let us now consider the working principle which this new concept puts in our hands. The key-note is the identity of life and consciousness. Unconsciousness even when it appears to be complete as in the plant is a positive acquirement. By means of it life, which is consciousness in its essence, canalises its activity. The most forcible illustration of the theory is the human intellect. The intellect is not an endowment which enables us to discriminate the nature of reality and discover truth, it is a mode by which the life impulse, working in us, narrows and restricts us to the particular aspect of reality which favours our activity. It gives the distinctively human form to human actions. Matter is the aspect it presents. Matter is an arrest of change or movement. This arrest is purely relative to our actions and it is the intellect which accomplishes it. The mode of its working is selection and the means of selection are contrivances to secure unconsciousness.

It is hardly necessary to point the conclusion. If the promise of a vast extension of knowledge in that new domain which we seem to have discovered by one of the same kind of accidents as those by which all the great discoveries in physical science have been made, the domain we now call unconscious mind, it is by this new working principle it will be realised. It is the true method of psychical science.

II.—THE RELATION BETWEEN INDUCTION AND PROBABILITY—(Part II.).

BY C. D. BROAD.

1.

IN the first part of this paper, in *MIND*, No. 108, I tried to show that the statement of inductive arguments in terms of probability is a necessary but not a sufficient condition of their validity. We saw that the laws of probability and the ordinary assumptions about equiprobability will not suffice to justify a strong belief in any law or even in a prediction for a few steps ahead. Some additional proposition about nature and not merely about probability seemed to be needed if induction were to be anything more than a guessing game in which we have so far had surprising luck. In this second part I propose to try and find what propositions are needed and what kind of evidence there is for them.

2.

The usual view of the logic books seems to be that inductive arguments are really syllogisms with propositions summing up the relevant observations as minors, and a common major consisting of some universal proposition about nature. If this were true it ought to be easy enough to find the missing major, and the singular obscurity in which it is enshrouded would be quite inexplicable. It is reverently referred to by inductive logicians as the Uniformity of Nature; but, as it is either never stated at all or stated in such terms that it could not possibly do what is required of it, it appears to be the inductive equivalent of Mrs. Gamp's mysterious friend, and might be more appropriately termed Major Harris.

It is in fact easy to prove that this whole way of looking at inductive arguments is mistaken. On this view they are all syllogisms with a common major. Now their minors are propositions summing up the relevant observations. If the observations have been carefully made the minors are practically certain. Hence, if this theory were true, the conclusions

of all inductive arguments in which the observations were equally carefully made would be equally probable. For what could vary their probabilities? Not the major, which is common to all of them. Not the minors, which, by hypothesis, are equally certain. Not the mode of reasoning, which is syllogistic in each case. But the result is preposterous, and is enough to refute the theory which leads to it.

Though we have thus cleared the ground of a false view its falsity leaves us with a much harder task than we should have had if it were true. For it is now by no means obvious in what direction to look for the missing premise about nature. Two courses seem open to us. (i) We might consider just where induction breaks down if it does not assume any premise about nature. We might then try to think of one or more propositions which would suffice to remove the difficulty. Lastly we might try to pare these down to their irreducible minimum and see whether they be self-evident or have any good evidence for or against them. (ii) But it will evidently be wise to use another method as a clue. We regard some inductive conclusions as fairly trustworthy and others as much less so. It will be wise to consider what assumptions or knowledge we have at the back of our minds when we make inductions. These may be betrayed by comparing the cases where we are satisfied with the induction with those where we are not. We can then state these assumptions explicitly; see whether they do suffice to make some inductions fairly probable; and consider the evidence for or against these assumptions. It seems reasonable to hope that the first method will suggest to us the *kind* of propositions about nature that are wanted, and that the second will suggest the actual propositions which people use when they make inductions. And we may hope that the latter will be instances of the former.

3.

Induction by simple enumeration has so far been wrecked on two different reefs. (1) The number of S's examined could only bear a vanishingly small proportion to all the S's in the world, even if any one S were as likely to have fallen under our notice as any other. The result was that the number of antecedently equiprobable hypotheses about the proportion of S's which are P is enormous, and therefore the antecedent probability of the only pair which would be laws, *viz.*, All S is P and No S is P—is vanishingly small. (2) It is certain that not every S is equally likely to have fallen into the class

of observed S's; for those which begin to exist after the experiment is concluded or exist in places remote from all the experimenters could not possibly have fallen into this class. It is pretty clear what *kind* of proposition is needed to diminish the first difficulty. We want some proposition which favours *laws* (i.e., universal propositions) as against propositions of the form $n\%$ of the S's in nature are P's; so that all S is P or no S is P shall be antecedently much more probable than the innumerable possible alternatives. And I have no doubt that this is what people must have had in mind when they spoke of the Uniformity of Nature and told us that it was a necessary premise of all inductions. But they hardly noticed how extremely difficult it is to state any such proposition in a form in which it is not flagrantly false. The variety of nature is just as marked as its uniformity; and, on the face of it, far more certain, since variety can be directly observed, whilst uniformity, strictly speaking, cannot. It is all very fine to adopt a haughty attitude towards particular propositions and to call them trivial; the fact remains that many such propositions are true, and that it is excessively difficult to state any principle which will favour laws as against particular propositions and not fly in the face of the facts. I can indeed state a principle of uniformity which will be compatible with any amount of variety, but I am far from sure whether it is either true or useful. The principle would be this:—

$$\phi a . \psi a . \supset : (\exists \chi) : \chi \neq \psi . \chi a : \phi x . \chi x . \supset . \psi x .$$

This means that if any individual *a* has the property ϕ and the property ψ [e.g., is a swan and is white] then there is some property χ other than whiteness [e.g., that of being European] which is possessed by *a*, and such that everything that is both ϕ and χ [e.g., is a European swan] is also ψ [e.g., is white]. The condition $\chi \neq \psi$ is added to avoid triviality, since if χ might be ψ a χ fulfilling the conditions always exists for $\phi x . \psi x$ analytically implies ψx . Of course χ might be identical with ϕ .

I am inclined to think that this is what those logicians like Prof. Bosanquet who say that all particular propositions are imperfectly apprehended universals have in mind. I am the more inclined to this view because this principle does make all laws simply convertible in a certain sense, and this is another characteristic opinion of the same school of logicians. Suppose that in the above formula we substitute everywhere ψ for ϕ and ϕ for ψ . We get

$$\psi a . \phi a . \supset : (\exists \chi) : \chi \neq \phi . \chi a : \psi x . \chi x . \supset . \phi x .$$

Of course the χ will not in general be the same in the two cases; but it does at least follow from the principle that there is always an universal proposition with ψ as subject and ϕ as predicate as well as one with ϕ as subject and ψ as predicate. And I can hardly suppose that these logicians intend to maintain much more than this.

Another principle, which many people seem to believe, can be deduced from the above. Many people would say that, if you find that some swans are white and that some are not, this is never the whole truth about the matter; all the white swans must have something common, and peculiar to them which 'accounts for' their whiteness.

A little simple logical manipulation leads to the proposition:

$$\phi a . \phi b . \psi a . \neg \psi b \supset : (\exists \chi, \theta) : \\ \chi a . \theta b . \chi \neq \psi . \theta \neq \bar{\psi} : \phi x . \chi x . \supset x . \neg \theta x .$$

e.g., If a and b are swans and a is white and b is not then there is another property χ possessed by a and a property θ possessed by b such that no swan with the property χ has the property θ .

4.

Now the proposed principle, which we will call *Unax* for short, must be admitted to have certain merits. If *Unax* were true the problem of induction would be shifted and lightened. Without it we do not know whether there is any law connecting S with P ; we are therefore liable to go wrong in two ways: (*a*) by thinking that there is a law and that we have discovered it when really there is no law at all, or (*b*) by thinking that the law is All S is P when really it is of some more complex form such as All SQ is P . If *Unax* be granted the first source of error vanishes. The second, which corresponds to the second difficulty in induction by simple enumeration, remains. But it could certainly be reduced by examining S 's under as various conditions as possible. We could never end by being sure that the law took the simple form All S is P , but we might conclude with fair confidence that, if it be All SQ is P , the factor Q is pretty abstract and accompanies S under extremely variable conditions, so that for most practical purposes, it is negligible.

Unax also has the merit that it could never be refuted by experience. Whenever you seem to have a conjunction of attributes ϕ and ψ which is not an instance of a general law of the form $\phi x . \chi x . \supset x . \psi x$ you can always say that this is because the property χ is too minute or obscure to be detected

by our present means of observation. No one could refute this possibility; and, if you believed it, it would furnish a motive for further and more accurate investigations.

This, however, is about all that can be said in favour of Unax. There remains much to be said against it. In fact Unax may be a first approximation to the principle for which we are looking; but it seems quite certain that, as it stands, it is in some ways far too general and in others not general enough, and that it is neither ultimate nor plausible. By developing these criticisms we may find out in what direction to look for more light.

(i) Unax, as stated, makes no difference between ϕ and ψ ; they may be any properties or combinations of properties. Now when ϕ is a property like being a swan or a crow and ψ is a property like whiteness or blackness the principle seems plausible enough. But suppose that ϕ were a property such as being spherical. I hardly imagine that the statement that, if anything is spherical and white, then it possesses some other property χ , such that all spherical objects with the property χ are white, would seem plausible. It therefore looks as if ϕ and ψ must not be properties which are wholly unrestricted, and that in fact ϕ must be a property of a very special sort, if the statement is to seem plausible. This is reinforced by the following consideration. We have seen that, if we take Unax without any special hypothesis about ϕ and ψ , two laws correspond to every conjunction of attributes. Now many people would hold that if a swan is white there must be some property χ possessed by this swan such that all swans with this property are white. But how many people would hold that if a white object is a swan there is some property χ , other than that of being a swan, which is possessed by this white object and is such that all white objects with the property χ are swans? Yet this, as we have seen, equally follows from Unax, if ϕ and ψ are supposed to be subject to no special hypothesis in it.

(ii) For Unax a *single* conjunction of attributes is enough to make it certain that this conjunction is an instance of *some* general law. Nor is it easy to see how this could be otherwise, for the influence of *number* of instances seems to have been exerted in the only way in which it can be relevant, *viz.*, through the laws of probability, before ever Unax was invoked. I hardly see how any principle about nature which is to do the work required of it can refer to the number of observed instances. If it is about nature it is about what exists whether we observe or not, whilst the number of instances observed is at least partly dependent on our own actions.

Yet many people who would agree that a good number of observed conjunctions of ϕ and ψ make it certain that ϕ and ψ are connected by a law would hesitate to say that a single such conjunction makes it even highly probable. It is important to be quite clear as to the precise nature of the difficulty here. (a) Nobody supposes that, with Unax or without, a single instance of ϕ conjoined with ψ makes the particular law that ϕ is always accompanied by ψ probable. But (b) Unax does say that a single instance makes it absolutely certain that there is *some* general law connecting ϕ with ψ . Now most people would be inclined to hold (c) that a fair number of instances of conjunction are needed to make even this probable, though a fair number will make it practically certain. Now their view is not supported at all by the probability-theory of induction *without* Unax; whilst, if they accept Unax as offered, their view is unintelligibly timid. Hence it must be supposed that they accept some principle about nature which is less sweeping than Unax; yet it is very difficult to see what principle about nature there could be which makes *number of observed conjunctions* relevant at just this point.

5.

I am inclined to think that both these difficulties (i) and (ii) are to be met by the same modification. When do inductions by simple enumeration seem to be highly plausible and when not? They seem plausible when we are dealing with substances which are believed to belong to what Mill would call a Natural Kind. We believe pretty strongly in the results of such inductions when they deal with the properties of such things as crows or swans or pieces of silver. But no one attaches much weight to inductions about the colour of billiard balls or counters in a bag. If Unax is to be rendered plausible it must be subject to the restricting hypothesis that ϕ is a property or set of properties defining a kind. If this be granted we see why common sense will not allow the reversibility which Unax permits when ϕ and ψ are unrestricted. Unax now takes the form:—

$$\phi \epsilon K . \phi a . \psi a . \supset : (\exists \chi) : \chi \neq \psi . \chi a : \phi x . \chi x . \supset_x . \psi x .$$

This we will call *Unaxk*. Now Unaxk says nothing about ψ defining a kind; hence, on substituting ψ for ϕ and ϕ for ψ , we get nothing startling, but merely a proposition with an hypothesis $\psi \epsilon K$ which is in general false.

We can also see now why common sense wants a number of observed instances before it will consent to be sure that there is *some* law connecting ϕ with ψ . It wants these instances in order to persuade it of the truth of the hypothesis that ϕ defines a kind.

It can only feel sure of this when it has met with a fair number of instances of ϕ and found that they have a great number of properties beside ϕ common and peculiar to them.

Finally (iii) we can now admit that Unax is not ultimate, and can see why. Unax is only plausible in the modified form of Unaxk. Unaxk refers essentially to kinds, and we have not as yet analysed what is meant by kinds and what is involved in the assumption that there are kinds in nature. Any further progress in solving our problem will therefore depend on a careful discussion of this subject. We must therefore bid Unaxk a long farewell for the present and turn our attention to the assumption that there are natural kinds.

6.

Even without entering at all deeply into the question of kinds we can see in a general way how the assumption of kinds affects the problem of induction about the properties of substances. Such inductions seem most plausible when the subject is a well-marked class like swans or crows and the predicate some fairly general and simple property like blackness or whiteness. Now the mere fact that ordinary language has taken the trouble to invent a general name like *swan* or *crow* tells us a good deal about nature. It implies that a large number of objects have been met with which have combined pretty constantly a large number of properties varying only within fairly narrow limits. It is true that you may *define* a crow or a swan or a man by a few properties. But this very fact is symptomatic. Whatever may be the dictionary meaning of 'man' we always mean by it something with a great many more properties than animality and rationality or two-leggedness and featherlessness. Anything that had these properties but differed widely in other respects from the men that we had met would only with great hesitation be called a man. Hence the fact that we are content with the dictionary definition is due to the fact that so far in our experience the properties mentioned therein have been associated with a whole bunch of other properties, and that all these have been exemplified together with but slight variations in a great number of instances. Thus when we ask ourselves the question: Are all S's also P? and suggest the possibility that

some may not be P we imply that P is only one of a large number of attributes, and we imply that a slight variation in P is consistent with the bulk of the remaining attributes being unchanged. For with any large change, we should cease to go on calling the object *an S*, and thus, even if this object turned out not to be a P, this would not be relevant to the question whether all S's are P; for this object would not be counted as an S.

So the actual state of affairs in any induction about substances to which we should be inclined to attach much weight is this: (a) A large number of individuals have been observed all of which had a large number of attributes in common and only differed by small variations of these attributes within narrow and characteristic limits. Scarcely any individuals have been observed which agreed with the former in a great many respects, but otherwise differed profoundly from them. And if such have been observed and have been numerous they count as a different kind and have a different name, so that no question arises of treating them along with the former individuals in making our induction. (b) The attribute P has been found to be present in all these individuals. This attribute is not of such importance that a change in it alone would prevent an object otherwise agreeing with other S's from being called by the name S. (c) If there be other individuals which agree so far with those already observed as to be appropriately called by the same general name S as they, how probable is it that they will also agree in having the attribute P?

The superior plausibility of inductions about kinds is thus partly a matter of words; but, like most matters of words, it rests ultimately on a matter of fact. The purely verbal point is that, unless the unobserved objects resemble the observed S's in the vast majority of their attributes they will not be called S's, and the question whether they be P or not will be irrelevant to the question whether all S's are P. The factual basis of all this is that a large number of very similar individuals have been observed; if they had not been numerous and had not exemplified an outstanding bunch of attributes men would not have troubled to give them the special name S. Thus, in any actual induction, the evidence is never merely the *number* of examined instances, but also the predominant agreement of all these instances with each other and the presupposition that the doubtful and unexamined cases must predominantly agree with the examined ones in order to count as relevant instances for or against the suggested law.

We might put the argument in the following way. The objections to induction by simple enumeration about the properties of substances are unfair to that process in the only case where anyone attaches much weight to it. They are unfair for two reasons: (a) They do not state the problem properly; and (b) they do not consider the whole of the evidence. Let us consider these points.

(a) It is unfair to put the problem in the following form: 'All the observed S's are P. There are innumerable unobserved S's. What is the probability on your observation that all these are P?' For what is the evidence that there are innumerable unobserved S's? Surely it is of just the same kind as the alleged evidence that the unobserved S's are P. You have observed a large number of S's; they were all P. If the observation of a large number of observed S's be a good ground for thinking that there are innumerable unobserved S's it would seem to be an equally good ground for thinking that there are innumerable SP's; for all the observed S's were in fact SP's. I do not at present wish to assert that we have good evidence for *either* conclusion; but it is obviously unfair to talk as if we were certain of the former and to make this a ground for feeling doubtful about the latter. It does seem likely that anything that is evidence for the one will be in its degree evidence for the other. We might put the matter thus. Either your evidence makes it highly probable that there are unexamined S's or not. If so, it is difficult to see what evidence could make it highly probable that there are unexamined S's and leave it highly improbable that they are SP's, when all the examined S's were SP's. If, on the other hand, there is no strong reason to believe that there are many unexamined S's, there is no strong reason for putting the probability that all S's are P very low, for there is no good reason to think that m is very small as compared with n in the fraction $\frac{m+1}{n+1}$. (It must be understood that at present I am only using general arguments, which must be taken as *illustrating* the way in which the assumption of kinds might affect the theory of induction, and not as *proving* anything conclusively. We shall have to consider the whole question in much greater detail when we have learnt more about kinds.)

(b) To consider only the number of the observed S's is to neglect part of the evidence. We have also to remember that to be called an S at all an unobserved object has to resemble in most of its properties those objects which were observed and were P. Hence an argument by simple

enumeration is always also an argument by analogy, and, *ex hypothesi*, the analogy is very strong or the unobserved case does not count as an instance for or against the law about S's.

7.

We see then that any actual induction about the properties of substances involves at least two presuppositions beside the numerical and other data of the argument, *viz.* (a) that we are dealing with *substances* and (b) that there are *natural kinds* of substances. Anything that is involved in these two assumptions may therefore fairly be regarded as part of the actual premises or principles of such inductions. We must therefore see what these two assumptions really do amount to, and afterwards what evidence there is for them. We shall find that, as regards evidence, (a) and (b) are entangled with each other and with induction by simple enumeration in a highly complicated way. But we must begin by treating them separately.

(a) *The Assumption of Substances.*—When we call a swan a substance we imply that it is something that persists at least for a time; is distinguishable from other swans and from other things which coexist with it; and that, in spite of changes, we can in theory at least identify it as it is at one moment with itself as it was at other moments. A persistent, changeable, and yet identifiable substance is always *at least* a series of states having certain relations to each other and certain properties common to them all. It may be something more than this, but I do not think that it need be so. By a state of a thing I mean a momentary particular which is one of the whole series of related particulars constituting the thing. A state is thus a 'substance' in the logical sense of being a particular and not a universal, though not in the physical sense which involves persistence and identity through change. When I call these states 'momentary' I do not wish to tie myself down either to the view that they have no duration or to the other view that each lasts for a very short time, characteristic perhaps of the series in which they occur. For our present purpose the difference is not of much importance. When I say that θ is a state of the substance Θ I therefore mean that θ is a particular which is momentary in a loose sense and is one of a series of momentary particulars $\theta_1, \theta_2, \dots$ which have the sort of common properties and mutual relations which entitle such a series to be called a substance. (This view is

to be distinguished from the assertion that 'things are *classes* of their states'; it says that things are *complexes* of their states and complexes of a very special kind. To illustrate by an analogy: My face is a complex in which my features are elements; it is not the class of my features.)

To say that Θ persists up to the time t means that there are θ 's fulfilling those conditions up to that time. To say that it then ceases to exist means that after then there are no θ 's which have the right amount in common or the right kind of relations with those of the series $\theta_1, \theta_2, \dots$ which existed before t and were the states of Θ . To say that Θ persists but changes at t means that there are θ 's which exist after t and have enough similarity to and continuity with those which exist before t to be counted as states of the same thing Θ , but that the last to be observed of the latter and the first to be observed of the former differ from each other in some 'first-order property'. By a 'first-order property' I mean a singular proposition ascribing a 'lowest quality' to a definite particular state, or asserting a 'lowest relation' between two or more definite states. I use the phrases 'lowest quality' and 'lowest relation' by analogy to the phrase *infima species*. I should not call colour, or even red, a lowest quality, but only a perfectly definite shade of red with definite intensity and saturation. In fact a lowest quality is universal in that it can have a plurality of instances; but these instances must be particulars. Similar explanations apply to the phrase 'lowest relation'.

The next point to notice is that all properties of *things* are at least 'second-order properties'. By a 'second-order property' I mean the assertion that a propositional function whose particular values are first-order properties gives true propositions for all, some, or certain values of the variable. Now it is evident that a great many properties of things are assertions about their characteristic ways of behaving. They thus assert how the first-order properties of one state will differ from those of an earlier state under given circumstances. Evidently such assertions are at least second-order properties. But this is equally true about what are called 'permanent properties' of things, though the fact is here less obvious. When you say that this penny retains its mass through all physical and chemical changes you are saying that for all values of θ , such that θ belongs to the series of states Θ constituting this penny, the function ' θ has the mass m ' gives a true proposition. The permanence of an attribute is thus only a rather special and peculiar mode of behaviour, and the persistent properties of substances are of at least the

second order just as much as assertions about their characteristic ways of changing.

8.

Doubtless permanence in this sense is the earliest and most striking feature which is chosen as a criterion to judge whether a state belongs to a series constituting a thing. Many series do continue in our experience for long periods with scarcely any serious variation in their first-order properties from one state to another. But even such series, which uneducated common sense regards without hesitation as constituting persistent things, have long gaps as far as our experience is concerned. While our attention is otherwise occupied those series may continue, but we certainly have no direct evidence that they do. How does common sense fill in such gaps? Suppose we are aware of a series of very similar states which we regard as the thing Θ_1 ; suppose that there is then a gap in our experience and that we then meet with no more states of this kind for a time. Lastly suppose that we again meet with a series which we can regard as a thing Θ_2 , and that the states of Θ_2 are as similar to those of Θ_1 as those of Θ_1 are to each other. Under what circumstances do we regard Θ_1 and Θ_2 as the same thing? (a) We may find that whenever we choose to adjust our bodies as they were adjusted when we perceived Θ_1 we are aware of a state θ as like those of Θ_1 as the latter are to each other. Under these circumstances we should say that Θ_1 persisted and was the same as Θ_2 . (b) On the contrary we may of course find that a change of bodily adjustment is needed in order to perceive Θ_2 , and that we can only become aware of a θ whenever we choose, provided we suitably alter the adjustment of our bodies. In such cases we tend most strongly to identify Θ_2 with Θ_1 and to hold that Θ_1 has really persisted through the gap in our experience, provided that we find that in order to become aware of θ 's intermediate between the end of Θ_1 and the beginning of Θ_2 an intermediate amount of adjustment is needed between that which was required to be aware of the last θ in Θ_1 and that required to be aware of the first θ in Θ_2 . The point here then is that you can perceive a θ of the right sort at any point in the gap if you will make the right bodily adjustments, and that the right bodily adjustments for success at various points in the gap form a continuous series between those which are successful at the beginning and those which are successful at the end.

We thus see that an important criterion for the persistence of a thing Θ is the belief that *whenever* we choose to perform certain actions we shall observe a particular θ which is so connected with the θ 's that actually are observed as to count as a state of the same thing. Now what evidence can I have for this belief in the case of some definite thing Θ which has ceased to be under my observation for a certain ten minutes? Clearly I cannot know by direct observation of Θ that if I do the right things in the ten minutes' interval I shall perceive a θ which can be taken as a state of *it*. For, by hypothesis, I do not do the right things, and do not become aware of any such states within this interval; this is implied by saying that Θ ceases to be under my observation during that ten minutes. My only evidence (apart from the testimony of others, which is often lacking) is the behaviour of *other* things of the *same kind* as Θ on other occasions. Suppose, *e.g.*, that I observed a certain state θ_1 at the beginning of the ten minutes, and that at the end of it I began to observe a certain state θ_2 . By hypothesis I have observed no intermediate states of this particular Θ . But I may have observed other Θ 's at other times. I may have observed one of them for two minutes after it reached a state like θ_1 , another for five minutes, another for seven, and so on. I may even have observed a Θ for a complete ten minutes after it attained a state like θ_1 and I may have found that it then reached a state like θ_2 . Thus my evidence for supposing that at a given moment in an interval during which Θ was not under observation I should have observed a certain state θ_m if I had done certain things is that I or others actually have observed a state like θ_m at a corresponding period in the history of some other Θ which was under observation.)

We thus see that the logical relations between substances, natural kinds, and induction are extremely complex. (i) Obviously the assumption of kinds of substances involves the assumption of substances. But (ii) we should have very little evidence for the persistence of a given substance if it were not for the fact that other substances of the *same kind* are observable when it ceases to be under observation. (iii) Inductions about the properties of substances are not plausible unless those substances are supposed to belong to a natural kind. Yet (iv) the evidence for the persistence of an unobserved substance from that of others of the same kind is itself inductive. (I do not of course suggest for a moment that people actually reach the belief that their table continues to exist when everyone goes out of the room by inductive arguments from the behaviour of observed tables. They do

not *reach* such beliefs by argument at all, any more than they argue to the existence of physical objects from their sense-data or to that of other minds from the behaviour of other bodies. But, if their belief in the persistence of a given substance were challenged, the only grounds that they could offer would be inductive arguments from other substances of the same kind which had remained under observation.

It will now be wise to discuss the assumption of kinds, since we see that it is closely connected with the persistence of substances and it is part of the definition of a substance to be a more or less persistent series of states.

9.

(b) *Assumption of Kinds*.—If we consider all the momentary states of all the material things which we have met, we find that, though infinitely various, they ring the changes on a comparatively few variables. States differ from each other in colour, sound, taste, smell, temperature, shape, size, etc. But they agree in being determined by one or more of these variables and by some special values of them. Let us call the various sensible qualities—colour, sound, temperature, 'feel,' smell, taste, etc.—*primary variables*. The above list is practically exhaustive as far as human beings are concerned. I have excluded shape and size from the list for reasons which will appear in a moment. Each of these primary variables has a comparatively small number of *dimensions*, as I will call them. *E.g.*, the dimensions of sound are pitch, loudness, and quality. Dimensions are specifications of a primary variable, having the following properties: (i) In any definite instance one value of each dimension must be specified; (ii) *A priori* and apart from any special causal laws which may be found to hold in this particular world any value of one dimension may coexist with any value of any other dimension of the same primary variable. Lastly each dimension of each primary variable is susceptible of a range of possible values which is sensibly continuous.

The position of spatial properties is unique and peculiar. We cannot treat shape and size as themselves dimensions, for they cut across the primary variables; *e.g.*, a patch of colour and a patch of temperature both have shape and size. On the other hand we cannot treat shape and size as primary variables. For it is of the essence of primary variables to be antecedently independent of each other. There is, *e.g.*, no synthetic, *a priori* proposition asserting that colour must be accompanied by temperature or temperature by 'feel' (in the

sense of hardness or softness), even though some such propositions should be found to be true in the actual world. Now there are *a priori* connexions between spatial attributes and primary variables. All instances of colour and temperature and 'feel' at least have some shape and size. And all instances of shape and size are also instances of *some* primary variable, *e.g.*, colour or temperature or 'feel'. We may say then that as regards any given primary variable extension behaves like a dimension, *i.e.*, it must be specified to determine any particular instance. But, unlike a genuine dimension, it is not tied down to any one primary variable. Finally extension in itself of course has dimensions in the strict sense.

Now any momentary state is completely specified when we are given (a) the primary variables, (b) the values of each dimension of each variable, and (c) the extension of the determinate value of each primary variable. The sum total of all antecedently possible combinations of values of this kind would give all the antecedently possible sorts of states at a moment. Any one of these sorts of states might, so far as we can see, have any number of instances. The only antecedent restriction on the number is that two precisely similar states will not count as distinct if they completely overlap each other in space. Now antecedently there seems no reason why any one of the possible sorts of states should be represented in nature by more instances than any other. We might therefore have reasonably expected to find at any moment the whole multiply-continuous series of possible sorts of states about equally represented in the existent world. But our actual experience of the world has been utterly and flagrantly contrary to this expectation. What we have found is not a regular distribution of all the states at a moment among all the possible sorts of states, but a "bunching together" of instances in the neighbourhood of certain sorts of states. Intermediate possible sorts are scarcely represented in nature, so far as our experience has gone, at all.

Suppose, *e.g.*, that there are N primary variables. Then of course there are ${}^N C_r$ possible r -fold combinations of them, and the total number of combinations of all orders will be $2^N - 1$. Now let us confine our attention to any one of the ${}^N C_r$ r -fold combinations of primary variables. Each of the r variables will have a finite number of dimensions, and between them they will possess a number of dimensions which may be represented by pr , where p is a positive integer in general greater than 1. Imagine now a pr -dimensional space formed with one dimension of one of the r variables for

each of its axes. Then, setting aside the characteristics of shape and size which, as we have seen, are also needed completely to specify a possible sort of state, we may say that each point in this space represents a possible sort of state defined by this particular selection of r out of the N primary variables. Now suppose that a fluid were distributed throughout this space in such a way that its density at any point represents the number of instances in the world of the sort of state represented by the point. Let us further suppose that the density of the fluid at a point were represented by the blackness of a dot made at that point. Then antecedently to experience we might expect this space to be uniformly shaded. But in actual fact, so far as our experience has gone, we have found a quite different arrangement. We should find a number of blobs in the space surrounding certain points. These blobs would be very dark near their centres and would shade off very quickly in all directions as we moved away from these centres. In the regions between the blobs there would be practically no dots at all, and such as there were would be extremely faint. And lastly the whole set of blobs would be confined within a region defined by moderate values of the variables.

10.

This sort of distribution corresponds to what is meant by natural kinds. A natural kind is a region containing a blob. To drop metaphors, a natural kind of state is a sort which has a predominantly large number of instances in nature and such that the number of instances of neighbouring sorts of states falls away quickly in every direction. The sort which has the maximum number of instances (and in our spatial picture is the mean point and the blackest of a blob) is the *type* of the kind in question. Any particular instance of it or of its adjacent sorts counts as a state of the kind. A kind of substance is, to a first approximation, a series of states all of a kind, and possessed of the sort of continuity and relations which make them one substance. (I say to a first approximation, because, as we shall see later, characteristic modes of change are as typical of kinds of substances as constancy of kind throughout a series of states.)

The net result then is that, even to a superficial observer, the distribution of states at a given moment is about as far removed as it could be from what is antecedently most probable, and that this mode of distribution shows no sign of becoming more uniform when we take all the moments of human experience together.

Now either this habit of heaping instances round a comparatively few possible states is typical of nature as a whole or it is not. If it is not we have to explain as best we can why it has been characteristic of nature so far as it has come under the notice of human beings. Supposing, for the sake of argument, that nature as a whole really distributes its instances uniformly among possible sorts we shall have to go on to assume that the position of the human race is in some way wildly abnormal so that the parts of nature which have fallen under its observation have been utterly non-typical of the whole. What would this assumption amount to?

It might mean either that the human race had been confined to a section of the universe in which the distribution of instances is excessively unlike their distribution over nature as a whole, and that this exaggeration in our part of the universe is corrected by complementary exaggerations in other parts. Or it might mean that, even within the part that has fallen under our observation, the distribution of instances is really pretty uniform, but that limitations in our perceptive powers or in our interests have prevented us from noticing all but the instances of a few possible sorts. In the end both alternatives depend on supposed limitations of our powers of perception. The second explicitly does so. The first, on further consideration, is easily seen to do likewise. The only importance of space and time for the inductive problem is that they impose limitations on what we can directly observe, and hence at the same time provide the motives and limit the data for inductive arguments. I cannot directly observe what is very remote in space or what happened before I was born, nor can I now directly observe anything that is going to happen later unless I chance to be a prophet.

11.

Now the lack of uniformity in the distribution of instances *within* the region to which I have been confined by spatio-temporal limitations certainly cannot be explained wholly by limitations of my interests and powers of perception. No doubt if the values of primary variables be above or below certain limits I cannot observe them. No doubt, too, there may be many variables that cannot fall under my observation because I lack the needful sense-organs. But this will not account for my failing to observe instances of sorts which fall between the sorts of which I do observe instances. The fact that I occasionally do observe instances of these sorts (*viz.*, 'monsters' in an extended sense of the word) shows

that their rarity in my experience cannot be explained by supposing that they are really present in large numbers but are unobservable to me. Again, while it is true that I often slur over minor differences and treat instances as exactly alike when they are only rather similar, it is certainly not true that my interest is only excited by similarity and not by difference. The success of Messrs. Barnum and Bailey shows that it is not mere lack of interest for intermediate sorts that makes us ignore them. If, *e.g.*, pig-faced ladies were not *really* rare within the range of our physically possible experience it would be unintelligible why the few who do turn up should be so much more interesting than ladies of the more usual kind. Thus I think we are forced to conclude that that part of nature which falls within the spatio-temporal limits of possible observation really departs very far from a uniform distribution of instances among possible sorts; and that the appearance of departure from uniformity cannot be explained by limitations of our interests or powers of observation.

12.

The second alternative, that the part of the world that has fallen under human observation really does depart widely from uniform distribution but that this is averaged out by the much wider part that has never been observed, is much harder to treat properly. It evidently assumes that there is an unobservable part of nature and that the sole reason why it is unobservable is because we cannot perceive what is very distant in space or part time or what is future in time. This assumption itself has doubtless many implications, but for the moment we will take it as it stands. We may then represent the whole course of nature as contained in a four-dimensional space with three spatial and one temporal axis. We may regard a human observer as a point surrounded by a four-dimensional solid. This solid represents the spatio-temporal limits of his possible perceptions. The human race within historical times will be represented by a big four-dimensional solid composed of such solids. Of course the solids will not exclude each other wholly; the centres of one or more will often lie within those of another. Thus the solid will be rather like a mass of bubbles made by blowing through a pipe into soapy water. The limits of this solid will be those of possible human observations within the period for which human history has lasted. Now either (*a*) we may neglect the fact that the human race arose from definite causes in a

definite part of the universe, or (b) we may take it into consideration. Let us first neglect it.

Then antecedently we can regard this solid representing possible human experience as shot at random into the space representing the whole course of the universe, *i.e.*, we have no ground antecedently for thinking that it is more likely to fall in one part of the course of nature than in any other part of the same shape and duration. The actual content of human experience will be represented by the content of the part of the whole four-dimensional space into which the four-dimensional solid happens to fall. Now if the heaping of individuals about kinds be a peculiarity of a small section of the universe, whilst elsewhere the distribution is nearly uniform, it is highly unlikely that human observers will have happened to fall just into this part of the universe. The larger we suppose the universe to be compared with the part of it which has this peculiarity the less likely it is antecedently that the solid representing the limits of human experience should have fallen totally inside this peculiar region. Really we have three four-dimensional volumes to compare: (a) that representing the whole course of nature, (b) that of the solid representing the spatio-temporal limits of historical human observation, and (c) that of the supposed exceptional region within which a discontinuous distribution of individuals about a few natural kinds is supposed to hold. Unless (c) be very small compared with (a) we cannot be very far wrong in extending the characteristics of what we have observed to the whole universe. On the other hand if (c) be very small compared with (a) it is very unlikely that (b) when thrown at random into (a) should fall wholly inside (c). And it is obviously more and more unlikely the nearer (b) approaches in volume to (c). Now it is only if the general course of nature changes soon after the spatio-temporal limits of our present experience are surpassed that the inductive extension of the general characteristics of what we have observed will soon lead us wrong. That is, such an inductive extension will be *practically harmless unless* (b) nearly approaches in volume to (c); and we have just seen that *if* (b) nearly approaches (c) the fact that (b) has wholly fallen inside (c) is an extraordinary coincidence which renders the existence of the supposed exceptional region (c) highly improbable.

13.

But it will no doubt be objected at once that all this talk about the human race being 'shot at random' into the

universe like a sack of coals into a cellar is the merest nonsense. It actually did arise at a certain moment in certain parts of space where the right conditions were fulfilled and has gone on ever since. Hence its range of experience cannot be compared to a *movable* solid which might have fallen anywhere in the universe. Now these statements may very well be true—I suppose that we all believe that they are true—but are they relevant? What is a person who makes them assuming? He is assuming that he can write a hypothetical history of the origin of human observers. Now this means that he supposes himself to know (a) that certain conditions held before human observation began, and (b) that these conditions, operating according to certain laws, were necessary (if not sufficient) for the production and continuance of life and mind as we know them. He thus claims a knowledge of what existed outside the range of human observation and of the laws that it obeys. His only ground for this must be the belief that he is justified in extending the characteristics of the part of the world that has fallen under human observation to parts of it which, by hypothesis, cannot have done so.

The logical position therefore seems to be this. Either we know that the general characteristics of nature which we have observed (confinement of instances to kinds, regularities of behaviour, etc.), are equally characteristic of the parts of nature which we have not observed or not. If so, then it is doubtless nonsense to talk of the human race and its observations being as likely to fall in one part of the total course of nature as in another, and our previous argument will be useless. But then it will also be needless. For anyone who supposes himself to have this knowledge supposes himself to know that the part of nature that has fallen under observation is not peculiar in its general (and even in some of its more special) characteristics. If, on the other hand, we entertain a doubt whether the general characteristics of the observed part of nature hold of the unobserved parts we *ipso facto* leave open the possibility that these unobserved parts are subject to no special laws and do not confine instances to kinds. Now relative to that possibility it is not nonsense to talk of the actual position of the human race in the course of nature as a whole as a random position. And what we have argued is that the hypothesis that we are in a singular region of nature tends to undermine itself because it is highly improbable that the whole course of human experience should fall (as it has done) into what on the hypothesis itself is a small exceptional region of the universe.

It must be noticed that this argument only applies at all strongly to the *general* characteristics observable in the part of the universe that has fallen under observation. It would be very extraordinary that, if only a small part of the course of nature confined its instances to kinds and its changes to regular rules whilst the rest of it did nothing of the sort, human experience should have happened to fall wholly within that small region. But it would not be at all extraordinary if in other parts of nature certain kinds which are predominant with us are not represented and conversely. In fact it is obvious that our experience makes it much more probable that the *general* characteristic of confinement to kinds extends widely beyond its limits than that the more *special* characteristic of favouring such and such kinds is widely extended. For the more special proposition implies the more general and not conversely; so that whatever is in favour of the former is in favour of the latter, but there may be evidence for the latter which has no special relevance to the former.

14.

Extension of Theory of Kinds.—So far we have argued that, even to a superficial observer, nature appears not to distribute its instances equally among possible sorts, and that it is reasonable to regard this general characteristic as probably extending much beyond the limits of human experience. But, to a superficial observer, confinement to kinds, though a striking characteristic of the observed part of nature, is by no means an universal rule within this part. In the first place there are occasional 'monsters'. Then again the contemporary states of various substances which would be counted as of one kind are never exactly alike. *E.g.*, the swans or crows that exist at any moment all differ more or less in their first-order properties. Again, if instead of thus taking a cross-section at a given moment, we consider the series of states constituting a given substance, they differ from each other in many first-order properties. And a point may be reached at which either the series stops altogether and the substance is said to have ceased; or else the first-order properties may change so radically whilst certain conditions of spatio-temporal continuity are still fulfilled that the substance is said to have 'changed into' one of another *kind*. There can be no doubt, I think, that the face of nature does present these aspects to all of us whilst we are still 'trailing clouds of glory behind us,' and that it continues to do so to many until the end of our lives.

Now at this stage there enters a characteristic habit of the human mind which has constantly operated with highly useful effects in the history of science. We draw a distinction between the superficial appearances of things and their more detailed and latent character. A contemplation even of the superficial aspects has strongly suggested to us some general rule, but there are a certain number of apparent exceptions. We then tend to proceed on the assumption that this general rule really is true without exception when the latent parts of nature are taken into consideration, and that the apparent exceptions can be explained compatibly with this view. Then we make more careful investigations with this idea as our guide, and we find that in a great number of cases the more accurately analysed and observed facts support the assumption. If this be so we tend finally to take the rule as a principle and to assume that any small residuum of obstinate facts which apparently refuse to come under it only *appear* exceptional because we have so far failed to find the right way of analysing or observing them.

I imagine that this is what M. Poincaré had in mind when he talked of laws being raised to the rank of 'principles' and then being 'true by convention' and 'beyond the attacks of experience'. It is important for us to consider the logical position of this habit. (i) In the first place we suppose that the law is strongly suggested to us by superficial observation. Now the law that all things are instances of kinds is quite as strongly suggested to us by observation as (say) the law that bodies continue to move uniformly in straight lines except for the action of other bodies. (ii) Our everyday experience has given us every reason to draw a distinction between things as they appear at first sight and things as they appear on closer inspection. Since things exhibit fresh details to us the more closely we observe them it is perfectly reasonable to suppose that they contain parts and details that we cannot observe at all. And, since the details that closer observation reveals are often found to be more important than those which were observable on a more superficial view, it is not unreasonable to think that the details which cannot be directly observed at all may be more important than any that can be observed. (iii) We have plenty of experience both of substances coalescing and of their separating; we know that the coalescence of two substances of the same kind generally gives a substance of that kind; that the coalescence of two of a different kind often gives one with different characteristic properties from either; and that sometimes when a substance splits up it does so into several of the same kind as itself and

sometimes into substances of different kinds. Now all these facts, which are common enough when we examine the world at all carefully, help to make the theory of kinds, which is so strongly, suggested but not wholly confirmed by superficial experience, more and more definite and rigid.

The notion of compounds and mixtures which differ markedly in their superficial properties from their components is suggested by experience of actually mixing and separating substances. Once suggested and recognised as a fact in the region of nature with which we have dealt, it enables us to hold that those things which are not on the face of them instances of kinds may yet be mixtures or compounds of things which are genuine instances of kinds. Thus one exception to a rigid theory of kinds (*viz.*, the existence of things of intermediate sorts) is removed by following out a suggestion which is (a) made plausible by our experience so far as it has gone, and (b) which that experience in its gradual development suggests to be extensible beyond the limit reached at any given moment by actual observation. But we cannot stop here, for we are still left with the fact that contemporary instances of the same kind that have actually fallen under our observation are not exactly alike, and that the successive states of what we regard as a single substance of a kind may differ seriously from each other. It is in connexion with these problems, I am inclined to think, that the notion of causation and of conditions becomes prominent.

15.

Kinds, Substances, and Causation.—We here meet again that irritating interweaving of various fundamental notions which we have already had occasion to notice and which makes it so difficult to treat the subject in any satisfactory logical order. Causal laws refer to the states of substances and special causal laws to the behaviour of special kinds of substances. But on the other hand, as we shall see, the definition of a kind of substances partly depend on the causal laws which substances of the kind are supposed to obey. And the identity of a substance of a kind may itself be defined by the fact that the states possesses certain properties which figure in some special way in a causal law. Let me illustrate before going further. Silver is a kind of substance, and the superficial marks of the kind are certain physical properties like colour, hardness, specific gravity, etc. Yet the vast majority of the silver in the world at any

moment is not represented by states with any of these properties; since most of it exists in chemical compounds of various sorts. A chemist in stating what he meant by silver would hardly trouble to mention these first-order properties. What he would do would be to mention how silver reacts under various conditions with various other substances. And he would count the characteristic properties of the various compounds of silver as much more distinctly characteristic of silver than the superficial properties of the metal itself. Thus when he talks of the characteristic properties of the kind of substance called *silver* he scorns to give us a mere enumeration of first-order properties, because he knows that these are constantly changing and that if he confined himself to them it would hardly be plausible to count silver as a kind at all. Instead he gives us second or higher-order properties, *i.e.*, statements of the characteristic mode of variation of the first-order properties under given conditions. Thus the characteristic marks of a kind involve conditions and causation. On the other hand all these higher-order properties themselves involve a reference to kinds of substances. They include statements as to what silver does in presence of chlorine, in presence of sulphur, and so on. Yet again these other kinds are themselves mainly recognised and defined by what substances belonging to them do in presence of other kinds of substances. If it is part of the 'definition' of silver that it is the kind of substance which gives a white insoluble compound with chlorine, it is equally part of the 'definition' of chlorine that it is the kind of substance that gives a white insoluble compound with silver. Lastly, when the chemist states all these second-order properties of silver he does not profess to be announcing merely analytical propositions; they cannot therefore be part of the meaning of *silver*, which must therefore be assumed to be known before the propositions are asserted. How are all these tangles and apparent circles to be straightened out?

I take it that the solution is somewhat as follows. The notion of silver as a kind of substance was first suggested by bits of metallic silver seen and touched under certain 'normal' conditions of illumination, etc. These first-order properties continued much the same through long series of states which had the sort of continuity with each other that constitutes them states of one thing. They were taken as the original definition of silver. But silver, defined in this way, is continually ceasing to exist as circumstances change. It is found however that when a 'silver series' stops and

is replaced (say) by a 'silver chloride series' certain regularities of mass hold between the two series, and under suitable conditions the 'silver chloride series' can be stopped and replaced once more by a 'silver series' in the old sense of silver. The mass of each state of this second silver series is the same as that of the first silver series. This identity of mass and of other first-order properties, the spatio-temporal continuity of the two silver series by the intermediation of the silver chloride series, and the regularity with which the silver series passes into a silver chloride series under one set of conditions and conversely under another, enable us to identify the first silver and the second. And these facts are summed up in the statement that the silver continued to exist throughout the silver chloride series in spite of appearances to the contrary. Now regularities of precisely the same kind hold for sulphur, chlorine, etc., defined originally by certain superficial first-order properties which persist under 'normal conditions'.

16.

We thus arrive at a distinction of kinds into kinds of the first, of the second, and (as we shall see in a moment) of higher orders. Kinds of the second order (chemical compounds) are true kinds in the sense in which we have all along been using the word. But the instances of them begin and cease in the course of history. This always happens, so far as our experience goes, by the coming together or separation of instances of kinds of the first order (chemical elements). Instances of kinds of the first order are taken to be persistent and not to have begun or ceased in the course of human experience. And this view is held in spite of the fact that such instances are constantly disappearing and apparently coming to an end; for, after all, chemical elements are much less common and less stable than chemical compounds. The explanation of this apparent paradox is however quite simple after what has been said above. The kinds which are so noticeable even on the most superficial view of the world are mostly of the second or third order. Swans, crows, etc., are kinds of the third order; for they consist of instances of certain kinds of the second order in certain characteristic proportions, arrangements, and extensions, about which they vary within narrow limits. The main reason why these are the kinds that strike us is their comparative stability. By this I mean that each instance of such kinds consists of a series of states with first-order

properties which vary very little even though conditions change a good deal. This is of course less true of kinds of the third order than of many of the second, for crows and swans die and decay, but many chemical compounds are intensely stable towards quite enormous changes in conditions. We can see then why it is kinds of the higher orders which first attract our attention and suggest to us the notion that confinement of instances to kinds is a general characteristic of nature, and that if we look more carefully we shall find that it is a rigidly general rule in spite of superficial appearances to the contrary. But, when we do investigate more closely, we find that these kinds which first struck our attention are not as a rule the most important kinds in nature. *E.g.*, silver chloride, as defined by its common physical properties, is an extremely stable kind; *i.e.*, these properties persist through long series of states under highly variable conditions. Compared with it silver, as defined by its common physical properties, is an unstable kind, for it is constantly tarnishing, dissolving, reacting, and so on. But under certain conditions a silver chloride series does wholly change its first-order properties and is succeeded by a silver and a chlorine series. Now we have no ground for saying that the silver chloride really persists after the change; for, if it does, does it do so in the silver series or in the chlorine series? It seems arbitrary to choose either. Again the mass of the silver chloride is now divided between the two series, and no silver chloride can be got from any one of them till either the other itself or an equal mass of some different sample of it is added to the first. We thus can attach a definite meaning to the statement that bits of silver and masses of chlorine persist in spite of appearances to the contrary; but, when we define persistence in this way, we have to deny that a bit of silver chloride persists when a silver chloride series ceases to show its defining first-order properties. Thus we reach the notion of first-order kinds and see that they are more important though less obvious superficially than those of higher orders.

At this stage the extremely peculiar character of the part of nature that has fallen within human experience becomes still more marked. For we find that every bit of matter that we come across can be regarded as either an instance of a kind of some order or as a mixture of instances of various kinds, and that the number of distinct first-order kinds is ridiculously small. We admit of course that there may be first-order kinds that we have never met with, and that what we take to be a first-order kind, may prove to be of a higher

order. But we do seem to have hit on the general ground-plan of the material world, however inadequate may be our knowledge of the details. And that ground-plan, suggested to us even by a superficial observation of nature, has shown itself to be capable of statement in a more and more rigid and exacting form as we have investigated nature more and more carefully.

17.

We have now seen that many of the most interesting properties of kinds of substances are not assertions about the *persistence* of the first-order properties of states of a series, but assertions about the ways in which such properties vary from state to state of a series with varying conditions. However Irish it may sound, it is true to say that the most important properties of first-order kinds are properties of second-order kinds. This of course simply means that, *e.g.*, the most important properties of silver are not the superficial physical properties of metallic silver, but are statements of the conditions under which metallic silver turns into such and such compounds and the conditions under which such and such compounds again give metallic silver. Now the identification of 'such and such' a compound of silver (*e.g.*, silver chloride) can only be made by mentioning enough of its properties to characterise it unambiguously. Thus it is true that most statements about first-order kinds are statements about the properties of the second-order kinds into and out of which they pass under given conditions.

Again, it is probably true that we should not have troubled much about conditions if it had not been for the changes in first-order properties that occur along a series of states regarded as constituting a thing. If first-order properties had all been highly persistent with varying conditions we should probably not have noticed that they depend on conditions at all. But, as it is, the variations in many series of states having thinghood force the notion of conditions on our attention, and then we come to see that even persistence of first-order properties depends on conditions and is only relative. Change the conditions enough and the most persistent first-order properties will begin to vary.

Now I am inclined to think that the notion of causation and conditions is best regarded as an attempt to reconstruct at a higher level the crude notion of things which has broken down on reflexion and minuter observation. I think that we shall see this clearly if we consider what is commonly

believed in practice about causal laws and the Law of Causation. In the first place it is always changes that are felt to need explanation, *i.e.*, if the series of states constituting a thing varies from state to state in first-order properties we are not inclined to accept this as an ultimate fact. Parallel with this, but less often explicitly noticed, is another fact. We find instances of the same kind coexisting at different places in space. Though we count them of the same kind the contemporary states of several of them will not as a rule be exactly alike. All crows are instances of a kind, but at every moment there are small differences between one crow and another. This is felt to demand some explanation. The cause of demands such as this should now be fairly obvious. Our original criterion of the persistence of a given thing was identity of first-order properties throughout a series of states possessed of spatio-temporal continuity with each other. In so far as the first-order properties vary throughout such a series the series departs from the standard of a persistent thing. Hence the need of an explanation for *changes* and the absence of need for an explanation of *persistence* is the need to reconcile a contradiction. We are determined (a) to go on talking of *this* thing and saying that *it* persists; indeed this is implied by calling the change a change in *it*. But (b) our original criterion of identity uses persistence of first-order properties. The need for explanation of change is the need for a less simple-minded criterion of one thing and of the persistence of a thing, which shall be compatible with both change and identity.

Again our ideal kind, suggested to us but never wholly exemplified in the world as we have found it, would have a large number of *exactly* similar instances. Actually we find large numbers of *very* similar but partly different states coexisting in various parts of space. Our demand for explanation is the demand to be allowed in some way to keep our notion of kinds as possessing *exactly* similar instances and yet to admit that the contemporary instances very rarely are exactly alike.

18.

These two closely connected demands are, I think, to be regarded as being in the strictest sense postulates and not axioms. They set us a problem, but there is no guarantee *à priori* that it will be soluble. What I mean is that it is not in the least self-evident that the universe *must* respond to our demand for permanent substances and for ideal kinds in some new sense of permanence and of kind, when it has failed to

answer completely to our original criterion. The actual fact seems to be this. The world as it presents itself to superficial observation fulfils to a highly surprising extent the condition of consisting of permanent substances of a few marked kinds. It fulfils this still better when we investigate more closely. But it does not fulfil it altogether. The position is that it fulfils it so well as to raise the expectation that a modification of the definition of permanence and of kinds, which shall be in the spirit of the original definitions, can be found, and that with this definition the universe will *strictly* consist of permanent substances belonging to a few ideal kinds. I am prepared to believe, if anyone can produce satisfactory evidence, that this expectation, in a crude form at least, is innate. This is of no logical importance, however; the really important point is that it is not *a priori*, that it is perfectly conceivable that the universe might not answer to these demands and that no such amended definitions that might be suggested would help us.

Now it will be found that the Law of Causation, as actually used, is such that if it be true the world does consist of permanent substances of a few ideal kinds, in a perfectly reasonable sense of *permanence* and *kind* which is only an extension of our original senses of these words. The Law of Causation says that every event has a cause. It refers to definite particular events and to each one ascribes another definite event or set of them as *its* cause. What then is meant by *a cause*? Evidently it has something to do with causal laws, but the precise connexion is not at first obvious. Causal laws, even in their crudest form, connect, not definite particular events, but classes of abstract events. For they imply the possibility of recurrence under varying conditions and at different times and places. Even the crudest sort of causal law is doubly abstract; it takes the form: Whenever an event of the sort η happens to a substance of the sort a an event of the sort η^1 follows after a certain lapse of time t in a substance of the sort a^1 . Of course as a particular case η^1 and η may be the same kind of event, a and a^1 may be the same kind of substance, and the two events may happen in the same substance. Again, of course, the antecedent in a causal law may be several abstract events in substances of several kinds; and these events may not be contemporary with each other. The same is true of the consequent. But in any case the important point for us to notice is (*a*) that the antecedent and the consequent in any causal law are doubly abstract and (*b*) that the Law of Causation, on the contrary, is an assertion about definite events in definite

substances. To use a phrase employed by Mr. Russell in *Principles of Mathematics* the Law of Causation deals with 'the causation of particulars by particulars'; and we have to reconcile this with the fact that no causal law deals with particulars at all.

The way to reconcile the two facts is as follows. We assume that any definite particular event can be unambiguously *described* by mentioning a finite number of abstract characteristics. These together tie us down to one definite substance or set of substances and to one definite event or set of definite events in these substances. Each of the characteristics used in the description is abstract, and, taken by itself, can recur at other times and places and in other substances. Each can therefore be taken (say) as the consequent in some causal law, and the antecedent of each in that causal law will, of course, again be abstract. The further assumption is that these abstract antecedents when taken together will once more suffice to tie us down to a single definite event or to a set of definite events in a single definite substance or set of definite substances. This event or set of events is then *the* cause of the definite event or set of events with which we started.

Thus the Law of Causation, in asserting that every event has a cause, makes the following three assumptions. (i) Every definite event can be unambiguously described by mentioning a finite number of its abstract characteristics. (ii) Either each of these characteristics taken separately, or selections out of them which together exhaust them, are consequents in causal laws. (iii) The antecedents in these causal laws are a set of abstract characteristics which, when taken together, unambiguously describe a definite event or set of events.

19.

We have now seen what the Law of Causation asserts; we can now see how it enables us to extend our definitions of *kind* and of *permanent substance*. The individual instances of a kind (even of a first-order kind) do constantly change their first-order properties, and thus at any moment two instances may be in very different states. But all these changes are subject to laws; these are characteristic of the kind, and they do not change. The permanence of first-order properties and their exact similarity among all instances, which first suggested kinds and permanent things, breaks down; but it is replaced by permanence of laws, *i.e.*, of second

and higher-order properties. Contemporary states do not now cease to be states of substances of the same kind merely because they differ in their first-order properties; for these differences in first-order properties are compatible with, and indeed are the consequence of, identity of higher-order properties combined with the varying external conditions which are implied by differences of place.

Pari passu with this modification of the notion of a kind goes a change in the notion of the permanence of a given thing. In the first place, even though spatio-temporal continuity throughout a series of states be still demanded as a necessary condition of identity, we no longer demand exact similarity of first-order properties. We are content with permanent laws + reversibility. By this I mean that if S be a certain state of a certain substance we do not demand that every state of a series shall be exactly like S in order to count as belonging to the substance; we admit very different states under different conditions; but we do demand that by suitably reversing the conditions any state that has happened in the series can be reproduced. And we assume that when this condition is not fulfilled we are not dealing with an elementary substance, and that all substances which do not fulfil it are compounded of substances which do fulfil it.

I think that we also demand some kind of first-order identity throughout the series, though it may be very slight, and, to superficial observation, very unimportant and obscure. This is why we make so much of all laws of conservation, *e.g.*, the conservation of mass, of energy, of momentum, and so on.

Corresponding to these changes a new notion is introduced side by side with the old notion of things. This is the notion of the causally isolated system. The old single substances of common sense, determined largely by spatial continuity of matter within a limited region still persist, but the notion of the isolated system composed of several such substances separated in space, largely usurps their place. Such a system is one in which all the laws governing the changes of first-order properties throughout the parts refer only to other parts of the same system and to their spatial relations and not to anything outside the system. An isolated system is thus the old single substance in a much modified and purified form. The importance of continuous filling of a boundary has diminished, and the parts are not series of precisely similar states. But, regarding the system as a whole as a substance spread out in space and time, all its variations follow constant rules and none of these rules refer to anything outside itself.

The existence side by side of the new notion of the isolated system and the old criterion of one substance as what fills a certain boundary leads to the distinction between immanent and transeunt causation. The causal laws characteristic of the system are immanent to *it*, as referring to nothing but its parts, but are transeunt to each of its parts, as referring to changes in other parts to account for the changes in any given part.

Complete causal isolation is of course an ideal rather than a fact. What we find is that a system is isolated for certain changes in its parts and for a certain degree of accuracy in accounting for these changes; for other changes and for greater degrees of accuracy different and in general larger systems must be considered. But it is evident that the law of causation would be a useless platitude and that the notions of permanent substance and kind would have broken down beyond hope of salvation if nature were not so constituted that there are systems much smaller than the whole of nature which are for many changes practically isolated.

20.

Let me at length sum up the results of this long, confused, and confusing discussion. All particular inductive arguments depend on probability and only lead to probable conclusions, *whatever* we may assume about nature. But *unless* we assume something about nature they give no finite probability to any law (*a*) because an indefinite number of alternative hypotheses which are not laws are as probable antecedently as the suggested law, and (*b*) because we are not equally likely to have met with any instance of the class under discussion, since it is quite certain that if there be instances remote in space or time they *could* not have fallen into the selection which we observed. What we actually assume is that nature consists of a comparatively few kinds of permanent substances, that their changes are all subject to laws, and that the variety of nature is due to varying combinations of the few elementary substances. These assumptions are neither self-evident nor mutually independent nor are they capable of complete proof or disproof by experience. The actual course of the process by which we reach these assumptions is somewhat as follows. Nature, even as known to us superficially, presents a surprisingly selective appearance. Of sorts of substances which are *a priori* possible and could be perceived if presented only a very small selection is presented, whilst those sorts which we do meet with have

very large numbers of instances. And, to a superficial view even, there are many series of states in nature which have the kind of spatio-temporal continuity which characterises a thing and moreover show practical constancy of first-order properties over long periods of time. Reasons have been given to show that this appearance can hardly be due to limitations of our powers of perception and interest *within* the spatio-temporal field of actual human experience. The view that these characteristics may only be true of a small part of nature into which we happen to have fallen was then discussed. It was argued that, as an objection to the possibility of induction, the argument is unsatisfactory. Either it literally assumes that our connexion with the part of nature with which we are connected is a random one, or that we have arisen here rather than elsewhere because of laws of nature. The latter view *assumes* laws of nature in regions spatio-temporally outside that with which we have come in contact through experience, since the supposed conditions for the origin of human experiences cannot themselves have fallen within the region of nature open to direct human experience. If, on the other hand, the view that the human race is as likely to fall into one part of the course of nature as into another be taken literally, we can show that it is highly improbable that the general characteristic of confinement to kinds, which we have noticed, extends but slightly beyond the limits of human experience. We thus seem justified in disregarding the possibility that this characteristic of the experienced world does not extend beyond it, as an argument against induction.

Up to this point, however, we can only say that experience has *suggested* a simple ground-plan of the material world to us, and that it is reasonable to suppose that this plan extends beyond what we have actually experienced. So far we have neither formulated the plan in rigid terms, nor, on the face of it, does nature, even as experienced, completely accord with it. At this stage the distinction between elements and compounds and between the perceptible and imperceptible parts of bodies, a distinction itself suggested by much even in the crudest experience, comes to our help. Pursuing this suggestion we have found it possible to regard nature as built up of a comparatively few natural kinds of the first order, all instances of which are *exactly* alike and *completely* permanent. An analysis of the meaning of kinds and of the permanence of substances has shown us what is the precise 'cash-value' of these statements. It has shown that it is because nature, so far as our experience goes, obeys laws in

its changes, that the criterion of persistence of substances and sameness of kinds, which broke down when we confined ourselves to first-order properties, can be rendered satisfactory by taking into account second and higher-order properties. It follows that it is a fundamental error to take the scientific notion of substance by itself as 'something that any fellow can understand,' and then raise difficulties about the law of causation. The notions of permanent substances, genuine natural kinds, and universal causation are parts of a highly complex and closely interwoven whole and any one of them breaks down hopelessly without the rest.

The upshot of the matter is that whenever we make a particular induction we have this general view about nature at the back of our minds. If we think that we have hold of a substance that is an instance of one of the few fundamental natural kinds, we attach great weight to our induction, otherwise we do not. The logical position is then (a) that those inductions which we regard as highly probable are so relatively to the belief that we really have got hold of the general ground-plan of nature in the region of phenomena under investigation; (b) the evidence for this is never of the nature of a 'knock-down' proof and no numerical probability can be assigned to it. The kind of evidence is that this plan is suggested to us in a rough form by crude experience, and that, as we investigate nature more and more thoroughly, experience itself *suggests* ways in which we can state this plan with greater and greater definiteness and rigour, and, at the same time, nature is found to *accord* with the more rigorous and definite plan far better than it did with the first crude suggestion of a plan. *E.g.*, we believe that we have got very near to the ground-plan of the material world in the theory of chemical elements, in the laws of mechanics, and in Maxwell's equations, and it is relative to these beliefs that particular inductions in chemistry, electricity, etc., are practically certain. The certainty of the most certain inductions is thus relative or hypothetical, and the probability of the hypothesis is not of a kind that can be stated numerically.

21.

I think that the actual history of the natural sciences bears out this view. They flounder about in the dark till some man of genius sees what are the really fundamental factors and the really fundamental structure of the region of phenomena under investigation. In mechanics the keystone is the notion of acceleration; in chemistry it is the theory of

elements and compounds and the conservation of mass; in economics, perhaps, it is the notion of marginal utility. Sciences where no such discovery has yet been made, such, *e.g.*, as psychology and biology are almost at a prescientific level; their inductions carry no great conviction to anyone trained in the more advanced sciences.

At the beginning of the first part of this paper I told the reader that I was extremely doubtful as to the additional principles about nature, which are needed if any law is to be rendered reasonably probable by induction. I have done my best in this second part to indicate the beginnings of an answer to my own question. But I am painfully aware that the article is complex and diffuse without being exhaustive. There is hardly a line in it which I could seriously defend even against myself if I chose to be an hostile critic. But I print it in the knowledge that if I now spend more time I shall only puzzle myself more thoroughly, and in the hope that its very badness may convince the charitable reader at least of the extreme difficulty of the subject.

III.—ON THE NATURE OF MEMORY.

BY DOROTHY WRINCH.

I.

IN beginning a study of the phenomena of memory, it is expedient first to point out an ambiguity in the words "memory" and "remembering" as ordinarily used. Suppose I say "I remember the face of the girl I saw yesterday". I may mean one or other of two things. I may mean that a definite phenomenon is occurring which may be called "a memory of the face of the girl I saw yesterday". On the other hand, I may mean that I could produce a phenomenon of this kind. With the second meaning of the word, the fact of my remembering the so-and-so is a fact of the form: under certain circumstances, I shall have an act which is a remembering of the so-and-so in the first sense. A memory of the second kind can be called a dispositional memory and one of the first kind a memory act. A dispositional memory, then, can be said to be a possibility of memory acts. This same ambiguity occurs in the case of knowing and a differentiation of knowings into dispositional knowings, and acts of knowing is a necessary prelude to any investigation of the nature of knowings in general. The relation between acts of a special kind $a(a)$, *e.g.*, fearing and the corresponding dispositions $a(d)$ as for example, when I say "I fear lions," or "Men fear thought," is very interesting and can be exhibited in the form:—

X has the disposition $a(d)$ = there are circumstances under which X would have an act which is an $a(a)$,
or as we may perhaps be allowed to express it:—

$a(d)$ is the possibility of $a(a)$'s.

Since the question of the relation between acts and their corresponding dispositions is one relevant not only to the case of memory, but also to very many other groups of psychological phenomena, it is best to leave the discussion of its nature and to confine ourselves in this enquiry into the nature of memory, to a discussion of memory acts.

Two artificial restrictions on the field of memory acts are to be made in this paper. First, I wish to discuss only those memory acts in which images occur: and in the second place, I wish to limit the class of memory acts to be discussed to those memory acts, which are memories of physical objects or of events of the same status. One object of the first restriction is to exclude at once those acts in which sense-data occur. I mean cases where, *e.g.*, one remembers a picture on seeing it again. These seem to me best called recognitions: though they share to some extent the properties of other memory acts, it is more convenient for the sake of the adequate discussion of properties they do not share, to discuss them separately. The other object of the first restriction is to exclude those cases of memory acts (if there are any such) in which there is no image element—the kind of occurrence that “remembering an idea” might possibly be. It does not seem clear that in every memory act an image occurs: it was therefore deemed best to make a restriction on the field of our enquiry which would exclude such imageless memory acts if they existed.

By means of the second restriction we are limited to a discussion of (1) those memory acts which are of the form¹

X remembers the so-and-so, or *X remembers a so-and-so*, or as it may be put more clearly,

X remembers the one and only thing having the property ϕ and

X remembers something having the property ϕ
where the property ϕ is significantly predicable only of physical objects (A)

and (2) those memory acts which are of the form²

X remembers E where E contains at least one constituent given only by the description “the one and only thing having the property ϕ ” or “a thing having the property ϕ ,” where again ϕ satisfies the condition of being significantly predicable only of physical objects. We shall therefore have to deal with

¹ Except in one or two cases that may be regarded as altogether exceptional and best treated by themselves. I mean such a case as when I am remembering something which I am simultaneously perceiving. Pointing to some one in the room, or to a picture on the wall, I may say: “I am remembering you,” or “I am remembering this”. The act is then not of the form specified.

² The same kind of exceptional cases occur here. I may say looking at the picture: “I remember this being here”. I think in such a case no constituent of the event expressed by “this being here” is given only by a description ambiguous and unambiguous. The question of these exceptional cases turns to some extent on the peculiar nature of what Mr. Russell has called “emphatic particulars,” *cf. Monist*.

memories such as those of "the clown at the pantomime I went to yesterday," "a dog," "Lopokova dancing in Prince Igor the day before yesterday," and "a Frenchman looping the loop in 1910".

These two restrictions limit our field very considerably. It may be the case that the first is unnecessary if we have the second: for it might happen that all memories of physical objects and events of the same status have an image element (whether or not this is *only* true of physical objects and events of the same status). And it may be the case that the second restriction is unnecessary if we have the first: for it might happen that all memories which have an image element are memories of physical objects and events of the same status (whether or not all memories of physical objects and events of the same status have an image element). However, in order to limit the field as we desire, it is clear that it is necessary to have the second restriction: for cases of memories of things other than physical objects and events of the same status occur. I may remember "the suggestion made last week," "seeing a dragon in a dream," or "the properties the gamma function".

Our restrictions on the field of memory acts to be discussed leave us then with acts in which an image occurs (and such acts we will call "image acts") and which are memories of such things as "Paderewski," "one of the people in the last act of the pantomime," "The King opening Parliament," or "a cartload of monkeys going down the street".

Since we have to investigate the nature of acts which are memories of physical objects or of events which themselves have reference to physical objects, statements about memory acts will necessarily involve physical objects. Such propositions then form a sub-class of the propositions whose significance has to be investigated when an interpretation of propositions about physical objects is being attempted. We cannot here attempt any such interpretation, nor can we try to criticise suggested interpretation in relation to the interpretation of propositions about memory acts. It is only necessary to make one observation. In Mr. Russell's interpretations¹ in which physical objects are said to be logical constructions, the form of the propositions which result when the suggested interpretations of physical objects are worked out, is very different from the form of the original propositions. It should therefore be remembered that some interpretations—certainly all those which suggest that any

¹ *Our Knowledge of the External World.*

of the constituents are logical constructions—will interpret propositions into propositions of a very different form. All through this paper, then, in the discussion of the characteristics of memory acts, it must be borne in mind that the forms of the various propositions which occur may not be the form of the propositions which we get when some special interpretation of physical objects has been adopted.

In our enquiry we shall endeavour to discover as many different characteristics of memory acts as possible. We hope at least to discover characteristics sufficient to distinguish them from acts which are not memory acts. We do not think it feasible to aim at finding the ultimate constituents of memory acts, partly because it would be a bold act to advance any view as to what are the ultimate constituents of psychological phenomena, and partly because it seems impossible in the present obscure state of epistemological theory to do more than discover some of the kinds of psychological phenomena which are involved in memory acts. But I wish to attach a special significance to the word *involved*. If A is an act and *f* is the fact whose existence can be asserted if and only if that act A occurs, then *f* may or may not have another fact as a constituent. If it has—and it is then generally called a molecular fact—the existence of the fact logically implies the existence of another fact *f*¹. Now, I wish to use the word *involved* in such a sense that an act A involves an act B, if the fact whose existence the occurrence of A enables us to assert has as a constituent a fact which exists if and only if the act B occurs. We are, then, attempting in this paper, to discover the nature of some of the acts involved in memory acts from an investigation of some of the acts which are involved in particular cases of memory acts. Our method will be to bring forward for consideration as many different kinds of memory acts as possible and to discuss in the order which seems most convenient the various aspects of the phenomena involved.

II.

The class of memory acts with which we are dealing is a certain sub-class of image acts. We may begin studying the difference between these memory acts and imaginings by reference to the image element. It is not, I think, difficult to see that a memory and an imagination image do not differ intrinsically. Suppose X describes Y to Z. Even if Z has not seen Y, X's description may be so good and Z's power of

making images from descriptions so great that the images in Z's mind resemble Y very closely.

The image in an act of memory, therefore, is not to be differentiated from the image of an act of imagining by any intrinsic property. The image in a memory act could very well be the image in an act of imagining. We are left then with the problem of distinguishing memory acts and imaginations still on our hands.

But if we consider a little more closely what happens in an act of memory and in an act of imagining, it will appear that there are other properties of these acts which might provide a basis for differentiation. First: can we differentiate memories from other image acts by reference to their objects, *i.e.*, by reference to the physical object or event of which they are memories? Now, we can only remember what we perceive. It may be the case that there are objects which can be imagined but not perceived and therefore not remembered: if this were so, we should be able to say definitely that an act having any of these as object could not be an act of memory. But it is certain that there are objects which can be both remembered and imagined. And acts having any of these for objects could not be differentiated into memory acts on the one hand and imagination acts on the other by reference to the object alone. But this does not exclude at once the possibility that the differentiation might be effected by reference to some other property of the object. Take for example the property of an object "having been perceived by me" or the corresponding property for an event. Can we say that if A is an act of my remembering or imagining B, that it is a remembering if and only if B has this property? This would provide a differentia for memory acts. But if we call X the subject of an act A when A is the act of X remembering or imagining something, I think cases occur where an act is a pure imagining, and yet, the object has previously been perceived by the subject. Suppose I am talking to X about various people and he mentions γ whom as a matter of fact I have seen but have forgotten. He describes γ to me, her eyes, the shape of her face, her nose, and her complexion, and I get an image. I then go over the various details of the description and perhaps modify the image. Often such a process will cause me to remember γ . But on the other hand it may happen that it is such a long time since I saw γ or that I found γ so uninteresting and paid so little attention to her when I saw her that I still do not remember her. Then I shall be imagining an object which has the property of having been perceived by me. Many

cases which have come up in psycho-analytic practice point to the same result. A patient is troubled by a particular image which comes into his mind very frequently, and he is worried by not knowing of what it is an image. In the course of treatment he comes finally to *remember* some event in his childhood, and to recognise that the image was an image of this event. The initial experiences were cases of image acts, not memories, notwithstanding the fact that the event in question belonged to the past experience of the subject. Our suggested criterion, then, falls to the ground for the property of objects which was to divide those which could be imagined from those which could be remembered can be possessed by objects of imaginings as well as by objects of memory acts. The question as to whether any property exists which would be adequate to give the division we want cannot be discussed for all properties at once. But in default of any other property suggesting itself we will make an attempt to effect the differentiation in another way. The only way, then, of deciding the question will be to discover various properties and investigate in the case of each one its adequacy for the purpose.

III.

Now memory acts vary very much. We get memories when images seem merely to float before the mind. We get also acts which involve very definite beliefs. It is the belief aspect of acts which is one of the most interesting for the epistemologist, and it is worth while trying whether this aspect will enable us to distinguish memory acts from imaginings. But, it is not of course the case that in imaginings there is no belief element. Take the case when X describes Y to Z and Z has an image of Y. When Z has got all the features right in his image of Y, looking at it, he may come to the conclusion that Y is a beautiful woman—or that Y's nose is too big for her face. These are judgments. The presence of a belief in an image act does not therefore mark off memories from imaginings. But suppose we try the *form* of the belief. This might differentiate memory acts from other image acts.

We are neglecting, then, for the moment, those memories in which there are no beliefs involved. The forms of the beliefs in the other memory acts are difficult to express with any degree of accuracy, and in the immense variety of memory acts the beliefs involved vary a good deal. There is, I think, no reason to suppose that a memory act involves only one

belief at most. It may therefore be the case that there are different kinds of memory acts which are to be differentiated by reference to the class of belief involved in them, and that all these classes have a common member, which may be taken as the differentia of memory acts in general. But we will consider a few particular cases of memory acts.

(1) I have an image before me and I believe: "This is an image of something I have seen". This is the only judgment¹ which occurs. Now for the sake of comparing this judgment with other judgments we may express it in the form²

$$\exists x . ORx . \phi x$$

where O stands for the image, R for the relation *is an image of* and ϕ for the property *is something I have seen*. Introducing the symbol d_ψ by the definition

$$F(d_\psi) := \exists x . \psi(x) . (Fx) \quad \text{Df}$$

The judgment can then be exhibited in the form

$$ORd_\phi \quad (1)$$

(2) Next I have an image and I judge that it is an image of something I have seen. But I go further—I judge that it is an image of one of the Oxford and Cambridge Boat Races, either the 1910 one, the 1911 one, or the one in 1912. I have been to all three of these Races, but my recollection of them has become a recollection of the three collectively and I cannot distinguish them in my mind. But, at any rate, I feel quite sure that it is one of these Boat Races that I am remembering. Here, in addition to the judgment (1) there is a judgment of the form "O is an image of one of the Oxford and Cambridge Boat Races, the one in 1910, 1911, or 1912". If χ is the property, *is one of the three Boat Races 1910, 1911, or 1912*, we can exhibit this judgment in the form

$$\exists x . ORx . \chi(x)$$

or making use of the notation

$$ORd_\chi \quad (2)a$$

Cases of memory judgments also occur when the image is to be an image not of a so-and-so but of *the* so-and-so: as an example one can take a case of remembering one's father. Here we can put the judgment in the form "This is an image of the one and only one man who is my father". Writing ψ for the property *is my father*, we get the judgment expressed in the form

$$\exists x : \psi y . y \equiv . y = x : ORx.$$

¹ Use the words judgment and belief as synonyms.

² I shall not give explicitly the analogous judgment forms for memory of event.

But it will be convenient to introduce a notation for unambiguous descriptions parallel to the notation we have introduced for ambiguous descriptions. If ud_{ϕ} is defined by

$$F(ud_{\phi}) : = : \mathcal{A}x : \phi y . y = x : F(x) \quad Df$$

the judgment we are discussing can be given in the form

$$ORud_{\phi} \quad 2(b)$$

Now in order to get this judgment in a memory act, it is clear that I must have seen my father. A posthumous child may be able to make this judgment when looking at a photograph after it has been properly instructed as to the original of the photograph. But it could not make such a judgment in a memory. And an analogous result holds good in the case of the Boat Races.

(3) A slightly different case will occur when I make a judgment "This is an image of one of the scenes in the play I saw yesterday," or "This is an image of the man I met coming in this evening". Now, these cases can be exhibited in entirely the same form as (2) *a* and *b*

$$\begin{array}{ll} ORd_{\chi} & 3(a) \\ ORud_{\psi} & 3(b) \end{array}$$

except that the properties *is one of the scenes in the play I saw yesterday* and *ψ is the man I met coming in this evening* refer definitely to a past perception of mine. Now, we pointed out that in the cases 2 (a) and (b) where the predicates were *is one of Boat Races . . .* and *is my father* I must as a matter of fact have seen one of the Boat Races and I must have seen my father. This I suggest is a particular case of a general statement one can make about memories of this kind. If I judge

$$ORd_{\chi} \text{ or } ORud_{\psi}$$

there is some property χ^1 and some property ψ^1 such that χ^1 and ψ^1 are satisfied by those terms which satisfy χ and ψ respectively and by those terms only, and χ^1 and ψ^1 have reference to a past perception of mine. We will express this in the form: when X is having a memory act containing a judgment of the form ORd_{θ} or $ORud_{\theta}$ then

$$\mathcal{A}\zeta : f_x(\zeta) : \theta(x) . \equiv . \zeta(x) \quad [A]$$

where f_x is the property *involves a reference to X 's past perceptions*.

(4) But there are further varieties of judgments in memory acts. I remember X my friend in Dublin. I have an image O . I make the judgment "Why that is my friend in Dublin

she *has* got a charming face". This judgment can be put in the form

$$\text{OR}ud_{\phi} . g(ud_{\phi}) \quad 4(b)$$

where ϕ is the property *is my friend in Dublin*. We get also judgments such as "This is one of my oldest friends: she has dark hair" which can be represented in the form

$$\exists x . \text{OR}x . h(x) . d_{\phi} = x \quad 4(a)$$

It will be noticed that in 4(b) a judgment of the form 2(b) is involved.

(5) Then we get cases where the form is the same as for these judgments but the properties ϕ contain a reference to the subject's past perception, as for example, when ϕ is the property *is the girl I saw in Paris* so that the judgment would run, "That is the girl I saw in Paris, she *has* got a charming face"—or when ϕ is the property *is a girl that I used to see on the way to school*, so that the judgment would run, "That is one of the girls I used to see on the way to school; she has dark hair". Then for the cases (4) and (5) we can say that when X is having a memory act containing the judgment

$$\text{OR}ud_{\phi} . g(ud_{\phi}) \text{ or } \exists x . \text{OR}x . g(x) . x = d_{\phi}$$

then it is true to say

$$\exists \zeta : f_x(\zeta) : \theta x \equiv . \zeta x \quad [B]$$

These forms, I think, exhaust the varieties of memory judgments. The constants involved in them are merely the relation R *is an image of* and the property (for different X's) f_x *has some reference to a past perceiving belong to X*.

The question as to whether in a memory act, a judgment of the form (1) must occur or whether a judgment of any of the other forms may be the sole representative of judgments of the forms in 1, 2, 3, 4, and 5 or in what kind of combinations they occur is difficult. It is an interesting question to consider the relation between the various judgments (if there are memory acts in which more than one judgment occurs) in a single memory act.

But one aim in our analysis of the form of memory judgments was to find a way of distinguishing memories from imaginings. We have recognised the existence of judgments in imaginings, so the question is: Can we show that no imagining contains a judgment of any of the forms of memory judgments?

Suppose a case of imagining where X is asking Y to describe to him a certain cathedral A. Suppose Y had been to see several cathedrals in France a few years ago and had written

a description of each. He cannot remember A now but he reads the description and gets an image of A. He may still not remember the cathedral A; in fact when he scrutinises his image O he may say to himself, "Fancy my forgetting A, it is such a lovely building. I have seen it, I know, but I should never have known it again." Now, in some reflexion like this, the judgment "I have seen this" might occur. And this judgment could be moulded into the form (1)

OR d_ϕ

where ϕ is *I have seen A*. The first form of the memory judgments then which we have put forward is not peculiar to memories.

And it is not difficult to find cases of imaginings involving judgments of the forms (2) *a* and *b*. If one is studying geography one might keep images in one's mind of various places and it might very well happen that some of the places were places one had seen. Suppose my friend X comes up to me when I am studying laboriously the geographical features of all the large towns in Southern China and points out the place where I spent Christmas, 1910. On getting an image from the description of this town in the book, I say to myself "This is an image of the place where I spent Christmas, 1910". This gives a case of a judgment of the form 2(*b*); and we can easily get a case of an imagining involving a judgment of the form 2(*a*).

Only the forms (3) and (4) and (5) remain to be discussed. Examples of judgments about images which are of these various forms and are not memory judgments are easy to find. We are then forced to the conclusion that the form of these judgments gives us no way of distinguishing memory acts from acts of imagination.

IV.

There is a further possibility. Is there any epistemological property of the judgment which will yield a criterion for memory judgments as opposed to imaginings?

Judgments can be classified from the epistemological point of view as primitive or derived, and by this classification one means to divide those judgments which are obtained by inference from other judgments from those judgments which are made directly and not inferred or deduced from another judgment.¹ The nature of inference is itself very obscure,

¹ Very many different meanings have been given to the word inference, but I want to use it in such a sense that (1) no act can be an act of inference unless it contains at least two judgments; (2) an act can be an act

and to adopt any classification which depends upon it is not of course to offer any ultimate solution of a problem; but in any science which is of a complicated structure we have as one of our first aims "the organisation of problems"—and I include in what I mean by this phrase the investigation of the relations between different problems. The knowledge that one problem depends only on a certain other problem, in default of the complete solution of the problem is a step in this organisation. If then the differentiation we are seeking can be given in terms of the difference between inferred and uninferred judgments, we shall have obtained a relation between this problem and the problem of inference: this will be a satisfactory result from the epistemological point of view.

The point to be discussed is: Can the judgments accompanying memories and imaginings be distinguished by reference to their epistemological status? I think they can. For take the cases we cited of judgments in imaginings having the forms (1) and (2). The judgments were all inferred judgments. Y only knew that the image of the cathedral was an image of something he had seen because he judged that his image represented something which had certain properties. The process of establishing his belief that this was an image of something he had seen before included going over the image and checking it from the description in the book. And there is most clearly inference in the other cases I cited.

We suggest, therefore, that every memory act which involves a judgment involves at least one primitive judgment. Now it may be the case that every memory act involves a judgment of the form "This is an image of something I have seen". If so it will be sufficient to show that a judgment of this form occurring in a memory act is always a primitive judgment. If, however, not all memory acts involving judgments involve a judgment of this form, it will be sufficient if we can show that in any memory act at least one of the judgments of the forms 1, 2, 3, 4 or 5 which it involves is primitive. But even this condition is not necessary for our point. For it may be the case that there is a much larger class than the class of judgment of the forms 1 to 5 such that any memory act involves at least one judgment having the form of one or other of this larger class of judgments.

Now it is not necessary to linger over rendering plausible the view that the judgment "This is an image of something

of inference and yet not be a case of logical inference, either deductive or problematical.

I have seen" is primitive whenever it occurs in an act of memory. Our examples of imaginings in which such a judgment is a derived judgment suggested the view that if it occurs in an act of imagining it is not primitive, and I think it is not extravagant to complete this by advancing the view that if the judgment is not primitive it is an act of imagining and not a memory.

We wish, therefore, to say that an act in which a judgment of the form "This is an image of something I have seen" occurs, if it is either a memory or an imagining, is the one or the other according as the judgment is primitive or derived. The differentiation of memory and imagination acts is then accomplished, if in every memory act a judgment of the simplest form is involved. But suppose it is not. If we have to allow that in some memory acts no judgment of the simplest form occurs, in order to prove that every memory act involves at least one judgment which is uninferred and of one of the forms 1 to 5 it will not, I think, be necessary to examine separately memories involving a judgment of the form 2 (the corresponding case for judgments of the form 1 has already been discussed), the case for memories involving a judgment of the form 3, but not one of the form 2 and so on. Suppose we call a judgment of the form 1 simpler than one of the forms 2 or 3 and a judgment of the forms 2 or 3 simpler than one of the forms 4 or 5. Then I think it will be plausible to say that in all cases of memories involving judgments, at least the simplest of the judgments of the forms 1 to 5 is uninferred; and if (as indeed seems very probable) any memory act which involves a judgment involves a judgment of the form "This is an image of something I have seen" this suggestion is equivalent to the result just put forward. It may very well happen that I have an image *O* and I judge about it (1) that it is an image of one of the Oxford and Cambridge Boat Races and (2) that it is an image of the Boat Race of 1913, where the second judgment is an inferred judgment and the first uninferred. In spite of the inferred judgment (2) this act will still fall under the criterion we have suggested. And other representative cases of memory acts involve inferred judgments, but there is always one at least of the forms 1 to 5 which is uninferred.

V.

If what we have said is true, and if the considerations we have brought forward are conclusive (as we hope they are), we have succeeded in differentiating this class of memory

acts by reference to the occurrence of at least one primitive judgment. Even if there are some memory acts which involve no judgment having any of the forms 1 to 5, it may be possible to obtain a differentiation in this way, since as we have pointed out, the suggestion we have discussed gives a sufficient but not a necessary condition that all memory acts which involve judgments may involve at least one primitive one.

We shall then temporarily define memory acts which involve judgments as image acts which involve at least one primitive judgment.

But we have not yet considered the question of memory acts which involve no judgments. Since it is obscure whether or not any such acts exist, our plan will be to offer a method which would enable us to distinguish memory acts which involve no judgments from other image acts, but to avoid discussing whether there are any memory acts of this kind.

In the first place, the non-existence of a judgment will not differentiate a memory act of this kind from an imagining, for there are imaginings which have no judgment element. A memory act involving no judgment would presumably be an image act involving a feeling directed towards the image. And the mere existence of a feeling directed towards the image is no differentia, since an imagining frequently involves a feeling directed towards the image. Now, there is, I think, a particular kind of feeling in an act which one recognises as a memory act and which has no judgment element, which never occurs in imaginings.¹ It is the feeling of familiarity.

If the results obtained from the separate discussion of memory acts which involve judgments and those which do not are adopted as they stand, and if members of both classes of memories exist, memories are to be defined to be the sum of two existent classes, whose determining functions are predicates having reference to a primitive judgment on the one hand and a feeling of familiarity on the other. Now an objection to this definition might be raised, on the ground that a feeling of familiarity and a judgment are very different in their nature. This objection might be met in two ways. We might try to identify a feeling of familiarity with a judgment of a certain form; but if we try to identify it with the judgment "This is something I have seen before" we are at once thwarted by the fact that this judgment occurs in

¹ This feeling occurs primarily in acts of recognition.

imaginings which involve no feeling of familiarity. This form of judgment was the most hopeful one to try, and I therefore suspect that it is impossible to identify the feeling with any form of judgment.

But I would try to meet the objection in another way. I do not think that it is unsatisfactory to define a class of phenomena such as memory acts as the sum of two classes whose determining functions are predicates having references to things of a very different nature; and I think that anyone raising the objection we are endeavouring to meet, would say in effect that memories must have in common a property which is "genuinely one property". The objection would then be that a feeling of familiarity and a judgment are of very different natures, and that the property of *involving a feeling of familiarity or at least one primitive judgment* is therefore not genuinely one property. In some sense some properties are "genuinely one property" and others are not. Take, for example, a hat, a coat, and a rabbit. They have in common the property of being (a hat, a coat, or a rabbit). But this is not genuinely one property. But it must be remembered that memory acts are a class of occurrences grouped together in one's mind just as planets and fears and apples are phenomena grouped together in one's mind. Very often, though one is quite definite about the mental grouping of most phenomena, there are certain border-line cases which one feels might belong to either of two groups. In dealing with these within one group or another some arbitrary element is introduced. This consideration does not prove that there is not at the root of every grouping of the kind one genuine property; but by the principle of inverse probability¹ since the probability that the boundaries of our groupings of phenomena would be vague on the assumption that there are no real properties at the basis of these classifications is greater than its probability without the assumption, it adds to its probability. There seems then to be no reason for holding that at the root of every grouping of this kind there is a property which is "genuinely one property" common and peculiar to all the phenomena. I think, therefore, that though the assumption on which the objection is based that the natures of a feeling of familiarity and a judgment are different must be allowed to be probably true, that the

¹ If h is the sum of propositions relative to which we are considering this problem and x/y means the probability of " x on the assumption y " the principle of inverse probability states that $a/h, b/ah = b/h, a/bh$. If then a increases the probability of b so that $b/ah > b/h$ then b also increases the probability of a .

principles at issue must not be accepted without further investigation.

If memories which do not involve judgments exist, the definition stands in terms of the judgment element in memory acts which involve judgments and in terms of the occurrence of a primitive judgment in those memory acts (if there are any) which do not involve judgments in terms of a feeling. But suppose we had adopted the converse procedure and had begun by the investigation of the feelings involved in memory acts. The feeling of familiarity occurs persistently in all memory acts which involve no judgments. But when we come to investigate the case of memories involving judgments we find that the feeling of familiarity still occurs. The question then presents itself: Could a division of memory acts and imaginative acts be obtained by reference to the feeling of familiarity? It has been done for memory acts which involve no judgment, since imaginings which involve no judgment, involve no feeling of familiarity. The answer to the question rests upon whether any imaginings occur which involve a feeling of familiarity.

In general, it is clear that no event in which a feeling of familiarity occurs is an imagining. But there is one exceptional class of cases in which it is not quite plain. We will go back to one of the examples of imaginings given earlier. I am looking at pictures of various places in a book and I am told that one of them is a picture of the place where I stayed at Christmas, 1910. I make an image of the place in my mind's eye and scrutinising it with some interest I make judgments among them: "They ought to know if this really is the place, so I suppose it must". But suddenly I have a feeling of familiarity and I say, "Of course! This is something I have seen before," and I probably make various other judgments, among them "*it is a place I have seen before and I was there in 1910*". Now this case is interesting in several ways. At the beginning we clearly have an imagining and at the end a memory. In the memory the judgments of the form 1 and 2(b) occur and there is a feeling of familiarity. We are fairly confident that it cannot be a case of memory if neither of the judgments is primitive; yet there is a feeling of familiarity. Now in the judgment I was about to make "It must be the place where," the word "must" shows that it would have been a derived judgment. The judgment "It is something I have seen before," however, was not derived. It is causally connected with the various judgments I have already made, but it is not inferred from any of them. The nature of inference is not

clear, but it is at all events obvious that to infer from A to B is not to be identified with A causing B. Here in the cases of which this example is representative we get the same result as before : namely, that feelings of familiarity do not occur in imaginings.

VI.

This conclusion, then, enables us to substitute a simpler definition of memory acts. We will call an act a memory act if it is an image act and involves a feeling of familiarity. The fact that all memory acts involving beliefs involve at least one primitive belief can then be stated as a separate result.

The epistemologist, of course, will be more interested in those memory acts which involve judgments than in other memory acts. Among these memory acts the greater number are of the forms 2 and 4, and for the most part in memory there is no reference to the past perceptions of the subject in the judgment. The cases 1, 2, and 5 are then comparatively unimportant. And even among these it will, I think, be the memories of events which are in some sense more important for a theory of knowledge than the memory of physical objects. We shall get then to acts involving beliefs such as : "It happened like this" or "this is how it happened" (where *this* refers to an image). And it is memories of this kind that give us knowledge of the past. Other aspects of memory besides the judgment aspect seems to present interesting features ; but memory is particularly important in the knowledge it gives us of the past. If our conclusions are correct, to allow that memory *ever* gives us knowledge of the past will involve us in allowing that sometimes one knows directly a proposition having one or other of the forms 1, 2, 3, 4 or 5. And it is, I think, always interesting to discover the forms of propositions which are directly known.

Linking up our investigations with the question of how knowledge of the past is possible, we see that memory is one of the bases of knowledge. This must be our excuse for treating in detail the judgment aspect of memory, which is the aspect most intimately connected with memory when it is looked upon as a means of obtaining knowledge of the past. But it also shows that very many other problems, and in particular the problem of truth and error in memory judgments, need discussion before the full epistemological importance of memory can be assessed.

IV.—DISCUSSIONS.

THE CATEGORIES OF BIOLOGICAL SCIENCE.

THE man of science who knows nothing of philosophy is wont to regard all valid generalisations as truths of equal value in the scheme of the Universe. But the metaphysician knows that there are degrees of truth just as there are degrees of reality, and that the concepts and terms of the different sciences may belong to different levels of thought or planes of comprehension, and represent varying degrees of abstraction. The controversy has recently arisen as to whether the categories of biology are ultimately reducible to those of chemistry and physics, and Prof. Pringle-Pattison¹ amongst the philosophers and Dr. Haldane² amongst the men of science answer the question in the negative, affirming that biology is an "autonomous science" with the right to its own conceptions and terms which need not and cannot be replaced by those of the inorganic sciences.³ Life, it is affirmed, can only be interpreted in terms of life, just as mind can only be interpreted in terms of mind. It is obvious that the categories of biology or physics are inadequate for the elucidation of mental phenomena. So, similarly, in seeking to explain the nature of the living organism, the more abstract sciences are insufficient for an interpretation.

It is proposed in this article to consider the subject critically and to deal with the question whether it is possible profitably to carry on biological research and to aim at making biological generalisations without perpetual reference to the methods and categories of the inorganic sciences.

A little consideration is sufficient to convince one that the categories of biology are not all precisely of one kind. Formerly, biology—or as it used to be called, natural history—consisted for the most part of mere description. The older naturalists dealt with what they thought to be concrete reality. The animals and

¹ A. S. Pringle-Pattison, *The Idea of God in the Light of Recent Philosophy*, Oxford, 1917.

² J. S. Haldane, *Mechanism, Life and Personality*, London, 1913; *Organism and Environment*, New Haven, London and Oxford, 1917; *Life and Finite Individuality, A Symposium*, London, 1918; *The New Physiology*, London, 1919.

³ As Prof. Pringle-Pattison points out (*loc. cit.*, p. 94) this idea is quite simply (but dogmatically) expressed in J. S. Mill's *Logic* (Book III., chapter 6).

plants were created each after its own pattern, and hypotheses about origins and relationships hardly existed. As Mr. Bateson says, "in the old time the facts of nature were beautiful in themselves and needed not the rouge of speculation to quicken their charm. But that was long ago, before Modern Science was born."¹ For the men of that time it was sufficient to observe the endless variety of nature and to find it very good. They contemplated what seemed to them to be actuality, which in all its manifold variety testified to the glory of God and the wonderful working of the Divine Intelligence. For them nature was not blind but contained an essential element of purposiveness which was ever present and reflected the mind of the Creator. In those days the æsthetic interest dominated in biology (which in the modern sense was not a science), and it expressed itself largely in the grouping of characters and processes in relation to their qualitative resemblances.²

With the growth of evolutionism the historical interest developed, and apart from the adoption of a generalisation which assumed the connexion of all life, there was the satisfaction in following the successive changes of organic form and so leading up to human existence as we know it at present. With the acceptance of Darwin's views as to the origin of new species a powerful impetus was given to the movement towards a mechanistic philosophy of the Universe,³ and the biologists of the latter half of the nineteenth century, in common with most other men of science, looked forward confidently to the time when the whole range of phenomena would be shown to be governed by natural laws of equal validity. In philosophy, positivism and agnostic realism were the dominant schools of thought, and little account was taken of the idealism of Hegel and the older metaphysicians.

But even in the seventeenth and eighteenth centuries, long before the movement in favour of naturalism had set in, the physiologists were at work providing chemical and physical interpretations of vital phenomena. The observations of Cesalpinus and Harvey led to a physical and mechanical explanation of the circulation of the blood. Borelli applied the laws of mathematics and physics to muscular movement, and was so successful in arriving at mechanical explanations of organic processes that others adopted his methods though not always with equally satisfactory results. Boyle, Hooke, Lower and Mayow, in the

¹ W. Bateson, *Materials for the Study of Variation*, London, 1894, p. vii.

² Cf. A. E. Taylor, *Elements of Metaphysics*, London, 1903, p. 287.

³ Nevertheless teleological factors have generally been held to be partly accountable for organic evolution, e.g., the Lamarckian principle of the inheritance of acquired characters, and sexual selection (cf. J. Ward, *Naturalism and Agnosticism*, vol. i., London, 1899, p. 278); to these we must now add Eugenics. The operation of these factors depends upon the apparent power of the conscious organism to interfere with the course of nature. See below, p. 71.

seventeenth century, and Black, Priestley and Lavoisier in the eighteenth, carried out experiments by physical and chemical methods which laid the foundations of our modern knowledge of the physiology of breathing. At an earlier date van Helmont founded the study of biochemistry. By the time that Darwin's theory of natural selection had been generally accepted as accounting for the evolution of new adaptations in accordance with natural laws of heredity and development, it seemed as if mechanical principles would triumph in the whole domain of scientific and philosophic thought.

Those who adopted the vitalist position and held it necessary to assume that life possessed some special attribute which distinguished it from non-living material, were in essence no less mechanistic in their philosophy than the avowed mechanists, since they merely postulated an additional mechanistic principle. Thus the vitalists, while raising no objection to chemical and physical interpretations of organic processes, held it necessary to suppose in addition that a living organism was endowed with a special force which enabled it to preserve its independence without violating any of the laws of the inorganic sciences. Such a vital force was believed to be capable of acting only in a suitable chemical and physical environment, and if the external conditions were sufficiently abnormal the force ceased to act, and the visible sign of the failure was the death of the organism. Moreover, the vital force whereby an organism was enabled to continue its separate existence, having once been destroyed either by a process of general decay or through the adverse action of external circumstances, could not be revived. In other words, for the vitalist, abiogenesis was an impossibility. And in support of the vitalist position there is the undoubted fact that abiogenesis or the evolution of life from inorganic matter has never been observed.

For the mechanist, on the other hand, abiogenesis has always been regarded as theoretically possible, and various attempts have been made in the laboratory to produce living organisms from inorganic matter in which the germs of life were known to be previously absent. The controversy between the mechanists and the vitalists, between those who asserted that life must have arisen by evolution from non-living matter and those who denied this possibility, has broken out from time to time amongst men of science, but so far there has been no satisfactory solution to the question whether there is any essential distinction between inorganic and organic phenomena. Amongst the philosophers, however, the problem has been regarded in a different light.

For Lord Haldane,¹ Prof. Pringle-Pattison and Dr. Haldane, the question between the mechanists and the vitalists is improper or meaningless; it is one which cannot be answered because it ought not to be put. Instead of asking whether living beings can be evolved out of lifeless ones they enquire whether the categories

¹ Viscount Haldane, *The Pathway to Reality*, vol. i., London, 1913.

of biology can be reduced to those of more abstract sciences, and we have already seen that they answer the question in the negative. Biology, they tell us, requires its own terms or categories, which belong to a higher level of thought than those of chemistry. Prof. Pringle-Pattison has developed his conceptions in a remarkable chapter on "The Liberating Influence of Biology,"¹ in which he claims the support of modern physiological science. To my mind it is a confession of weakness on the part of the philosopher that he needs such liberation, especially if it is one brought about by misunderstanding the position of the vast majority of those who are, or have been, occupied in biological investigation. Prof. Pringle-Pattison can justly claim the support of Dr. Haldane, and perhaps also of the general trend of opinion amongst the biological metaphysicians such as M. Bergson, but apparently he does not realise that the conceptions and methods which are habitually and effectively employed by the student of animate nature are still those of the "old guard".

"The phenomena of life," says Sir Edward Sharpey Schafer, "are investigated, and can only be investigated, by the same methods as all other phenomena of matter."² In the preface to a recent work covering the whole field of "General Physiology," Prof. Bayliss quotes with approval the following words of the great French physiologist, Claude Bernard:—

"There is in reality only one general physics, only one chemistry, and only one mechanics, in which all the phenomenal manifestations of nature are included, both those of living bodies as well as those of inanimate ones. In a word, all the phenomena which make their appearance in a living being obey the same laws as those outside of it. So that one may say that all the manifestations of life are composed of phenomena borrowed from the outer cosmic world, so far as their nature is concerned, possessing, however, a special morphology, in the sense that they are manifested under characteristic forms and by the aid of special physiological instruments."³

Prof. Loeb has just published a new monograph⁴ which is an extension of his former work on the movements of the living organism, and the aim of it is to show that those movements are of the nature of tropisms and can be dealt with by the quantitative methods of the physicist. The extensive work of the same physiologist on the fertilisation of the ovum as a chemico-physical process is another illustration of the rapid progress which has been made by utilising methods which are now habitual among biological workers. Again, Prof. D'Arcy Thompson's recent book entitled

¹ And in the following two chapters.

² E. S. Schafer, *Presidential Address to the British Association*, 1912.

³ W. M. Bayliss, *Principles of General Physiology*, London, 1913.

⁴ J. Loeb, *Forced Movements, Tropisms and Animal Conduct*, London, 1919.

*Growth and Form*¹ is an example of the application of mechanistic interpretation to the facts of morphology.

The perusal of any current physiological journal will supply numerous other instances of the way in which biological study is being advanced by the use of chemical and physical methods.

But Dr. Haldane is not satisfied. "Somehow or other," he says, "a living organism never seems to be a mechanism, however often it may be called one."

Presumably Dr. Haldane is here speaking as from the standpoint of the "plain man". But what a thing seems to the plain man, who is a naïve realist, has nothing to do with the question. A lump of chalk to the plain man does not seem to be a combination of calcium, carbon, and oxygen; at least that is not his ordinary idea of what it is, no matter how clearly chemistry may prove that chalk is so composed. Still less does it seem to him to be a collection of electrical corpuscles in a state of rapid motion, however much the physicist may tell him it is so. Further, to the artist or to the poet an object of nature may mean much more than it does to a man who has no 'eye' for beauty. So, too, an animal, for a farmer or a live-stock expert, judging cattle at a show, is very different from what it is to a biologist who deals with life at another level. And again, to a doctor practising the art of medicine, the life of his patient may be something much deeper and fuller than it is for one with no interest in the medical profession. These instances involve no contradiction; neither is there any inconsistency in the view that for the physiologist, pursuing his own line of study, the living organism is just an intensely complicated mechanism and nothing more.

Dr. Haldane proceeds to argue further that because complete physico-chemical explanations of physiological processes are apparently more remote than they seemed to be in the middle of the last century, therefore the mechanistic hypotheses of organic nature are a failure. It would be as legitimate to contend that all research is a failure, since it is a truism that every investigation opens up further fields of inquiry, and so on to the indefinite regress. As Goethe said:

"Da muss sich manches Räthsel lösen
Doch manches Räthsel knüpft sich auch".

But Dr. Haldane does give certain definite illustrations of physiological processes which appear to go on in defiance of physical laws, and the most noteworthy is that of the secretory function of the epithelium of the lung in the higher vertebrates and of the air bladder in fishes, which instead of merely permitting the diffusion of oxygen as a non-living membrane would, is able, when needful to the organism, actively to push oxygen inwards contrary to the mechanical laws of osmosis. A friend of mine who is a physicist assures me he could conceive of more than one way in which this

¹ D'A. W. Thompson, *Growth and Form*, Cambridge, 1917.

might happen without violating the laws of physics. At present we are ignorant of the explanation of this particular phenomenon, just as in the past we have been ignorant of the nature of many other vital processes which are now understood. Moreover, Dr. Haldane's position in regard to the matter is hardly different from that of the orthodox vitalists.

In what he has written about the mechanistic theories of heredity Dr. Haldane seems to me to be on firmer ground, and I am in agreement with him in some of his criticism. But to my mind the real difficulty about the older theories of inheritance (whether they concern gemmules, stirp, germ plasm, or any of the other substances which were supposed to contain carriers of heredity) is that they do not fulfil the conditions of a true scientific hypothesis. The primary object of science is to reduce the course of events to laws of uniform sequence, and so to facilitate prediction and an interference with the course of nature for the specific purposes of man. A law of nature as embodied in a scientific hypothesis, in order to be valid, must enable one to predict, not with absolute certainty, but with a reasonable degree of assurance. And as Mr. Bradley says, "in order to understand the coexistence and sequence of phenomena, natural science makes an intellectual construction of their conditions. Its matter, motion and force are but working ideas, used to understand the occurrence of certain events."¹ The same idea has been expressed by a distinguished physicist who affirmed, though I have never been able to verify the reference, that a law of nature is not a statement of fact but of policy. A sound policy having been adopted, the things we expect are the things that come about, but to the question why this is so, science has no answer.

Now all the older theories of heredity are alike in the following two respects. In the first place, there never has been any direct evidence that the material of heredity is transmitted in any of the variety of ways postulated, and secondly, none of these hypotheses enabled one to predict phenomena which could not otherwise be predicted as a result of ordinary experience. It has always been known that like tends to beget like, that the offspring for the most part resemble the parents and to decreasing degrees the grandparents and ancestors, while the most that could be said in favour of certain of the older theories of heredity was that they supplied vague and uncertain explanations of reversion to an ancestral type as a result of cross-breeding, and of the fixity of type produced by inbreeding, facts which were also known and consequently could be predicted as a result of ordinary experience and without recourse to any theory of heredity at all.

Such criticism, however, does not apply with the same force to the Mendelian theory of heredity, the discovery of which marked a new epoch in the history of the subject and has given rise to a new branch of knowledge, the science of genetics. This is not the

¹ F. H. Bradley, *Appearance and Reality*, London (6th impression), 1916, p. 283.

place to refer to the important discoveries to which this theory has led, and here it will suffice to point out, first, that it differs from the older theories in affording a means whereby the facts of inheritance can be predicted in a form more definite and precise than heretofore, and secondly, that the explanation of the phenomena is to be found in the working of the ordinary laws of probability as they apply to the *chance* matings of gametes or reproductive cells which are believed to be of different kinds corresponding to the characters of the organisms to which they give rise, these different kinds of gametes being produced in definite mathematical proportions. The explanation underlying the Mendelian theory of heredity is a purely mechanical one and contains no teleological element. Moreover, students of genetics have never concealed the belief that the Mendelian theory of unit factors distributed amongst the gametes is something more than a mere analogy to the atomic and molecular theories of chemical science, and that this hope will be justified by the advance of chemical physiology.

Dr. Haldane's main objection to mechanistic theories of heredity is that they assume the existence of a germ plasm of inconceivable complexity, and that it is impossible to see any glimmer of explanation of the facts which they are intended to elucidate. This is again the argument from ignorance, and moreover there are hints, few and far between it must be admitted, as to how further advance may be made. By the union of the spermatozoon with the ovum two effects are produced. First, there is the fertilisation effect which Prof. Loeb has shown can be imitated by physico-chemical means, and secondly, there is the hereditary effect. Now Prof. Hertwig has shown that the spermatozoa of a frog, if acted upon by radium, may lose their power of hereditary transmission while retaining their capacity to effect fertilisation. Here we have a case of the mechanism of inheritance being thrown out of order by physical action and without causing the death of the reproductive cell. And if the hereditary functions can be inhibited by physical factors, it is surely not outside the bounds of possibility that they may be regulated by such means. As Prof. Punnett says, one day "out of some wild laboratory experiment there may flow a stream of new forms of living things".¹

Dr. Haldane complains that mechanistic theories do not help him in his science. "If we are to get a grip of biological fact," he says, "—the grip which enables us to predict—we must always keep the whole organism in view," we must deal with life in terms of life. Here I challenge Dr. Haldane. Can he put forward any purely biological or teleological theory of heredity which will conform to the conditions of a true scientific hypothesis in enabling one to predict what otherwise could not be predicted? Or, to repeat my challenge in a more general form, will Dr. Haldane, by

¹R. C. Punnett, *The Future of the Science of Breeding* (in *Animal Life and Human Progress*, edited by A. Dendy), London, 1919.

specific illustrations, explain how the adoption of exclusively biological categories is going to assist us in advancing investigation?

I yield to no one in admiration for Dr. Haldane's work upon the physiology of breathing, but this same work seems to me to be a remarkable illustration of the ever-increasing adequacy of the physical and chemical categories in the interpretation of organic phenomena. To my mind there is nothing gained for biological research by seeking to interpret life in terms of ends or purposes.

But I must not misinterpret Dr. Haldane. Neither he nor his brother, Lord Haldane, find in life as such the purposiveness of the conscious organism: they repudiate the need for introducing into biology categories which belong properly to mental science, but nevertheless they continually utilise such expressions as "quasi-purposiveness," and they tell us of activity according to *requirements*, and such conceptions they regard as necessary for the proper understanding of the living organism.

"To the question why living organisms behave as they do," says Dr. Haldane, "the only answer is that it is part of the nature of reality that they do so."¹ Such a way of regarding vital phenomena seems ill-calculated to advance our knowledge of the organism, and this after all is the object of biology.

What would it have profited if Prof. Loeb, in treating of fertilisation, had started on the assumption that a physico-chemical theory was improper or irrelevant, and had, as an alternative, put forward some vague generalisation, such that the sperm and ovum are actuated by an inherent purposiveness which induces them to adjust themselves to one another, thereby acquiring a new vitality, to the end that a new generation might be produced? This is hardly a caricature of the method which Dr. Haldane advocates, but which, to the great advantage of physiology, he does not seem to carry out in his own work. To my mind, if his way of regarding the matter were adopted, it would lead to the stultification of biological science. Here I am in agreement with Prof. D'Arcy Thompson who in his contribution to the Aristotelian Society's *Symposium*² has anticipated me in part of my criticism. Putting aside the aesthetic and historical interests of biology as extra-scientific, and medicine, which is an art as well as a science, biological investigators in general find the categories of chemistry and physics to be sufficient for their own studies. The introduction of teleological conceptions in biology serves only to produce that very confusion of the categories which the brothers Haldane so strongly deprecate.

The standpoint of the man of science is that of phenomenalism, which, as Mr. Bradley says, "is useful and quite necessary, and the metaphysician who attacks it when following his own business,

¹ J. S. Haldane, *The New Physiology*, London, 1919, p. 125.

² D'A. W. Thompson, *Life and Finite Individuality, A Symposium*, London, 1918. See also his review of *The New Physiology*, MIND, July, 1919.

is likely to fare badly".¹ Later, in the same book, the author expresses something more than a doubt as to whether we may suppose ends operate in nature except "in finite souls and in volition".² And further on I read, "Every special science must be left at liberty to follow its own methods, and if the natural sciences reject every way of explanation which is not mechanical, that is not the affair of metaphysics. . . . And this question of the operation of ends in Nature is one which, in my judgment, metaphysics should leave untouched." Thus, the man of science who finds a mechanistic view of the Universe sufficient for his working needs is in agreement with the greatest living master of idealistic philosophy.

Are the categories of biology reducible to those of the inorganic sciences? To my mind the answer turns on how we reply to the question, what do we mean by biology? Do we mean the biology which is known to the worker in the laboratory and the observer in the field, or do we mean a biology which abstracts less and includes much more, which embraces all the categories of psychology as well as those of teleology and the more concrete forms of knowledge, which inquires into the purpose of things and their relation to the ultimate reality? If this is what we mean by biology, it is no part of natural science, and its relation to the limited field of inquiry which the scientific worker knows under the same name is in its essence no different from its relation to chemistry and physics and mathematics or any other branch of natural knowledge. All of these sciences deal with abstractions, and teleology has no place in any of them. The study of mind and consciousness is no part of ordinary biological science. Here we must pass to a higher category in which teleological conceptions are not only permissible but are indeed necessary. In psychology the categories of causation are insufficient. Mind cannot be interpreted in terms of life.

Against teleology in its proper sphere I have nothing to say, but I cannot see why the phenomena of life, considered apart from consciousness, should be selected as a more appropriate field for teleological interpretation than the rest of the material universe. The apparent association of life with consciousness in man and in the higher animals has probably been largely responsible for this confusion of the categories.³

¹ Bradley, *loc. cit.*, p. 126.

² *Ibid.*, pp. 495-497.

³ It is of course true that physiologists sometimes speak of the purpose of an organ when they mean its function or use, in the same way as we may speak of the purpose of a particular part of a machine. So also they may speak of increased fecundity as being the purpose of polyœstrum (or the recurrence of the sexual periods within a single breeding season) when they mean that this condition or habit has developed on account of its survival value. But this is not a true use of teleological categories; it is merely the adoption of a teleological mode of expression for purposes of abbreviation. In explaining how polyœstrum is brought about physiologists employ the category of causation. Modern physics, however, appears to have gone a step further in the direction of abstraction and has aban-

One of the greatest difficulties which confronts us in attempting to think out a universal scheme is the apparent power of the conscious organism to interfere with and alter the course of nature. It may be that here we have a hint that mind and the material universe are not diverse, but that if we could transcend the level of thought which is normally ours the disparateness would be resolved. At present we seem to be confronted with a hopeless duality, which in our finite life we may never more than partially dispel.

Yet even here there is no need for us to despair. Since the time when our mentality was at the level of that of the lower organisms we have advanced much both in knowledge and in understanding. Is it impossible that in the progress of the future, and even in finite existence, we may learn proportionately more?

"For men have hopes which race the restless blood,
That after many changes may succeed
Life which is life indeed."

Surely with the coming of that life our knowledge will be transcended.

done the notion of cause, substituting for it the conception of functional relation. (See Bertrand Russell, *On the Notion of Cause*, Presidential Address to the Aristotelian Society, 1912, reprinted in *Mysticism and Logic*, London, 1918.) Prof. Pringle-Pattison, therefore, is not quite correct in regarding the idea of cause as lying at the basis of scientific knowledge, though the substitution for it of the conception of functional relation would not seem to affect his argument (*The Idea of God*, p. 101), which is to insist on an essential distinction between the mentality of man and that of the lower animals.

F. H. A. MARSHALL.

IDEALISM AND THE EXTERNAL WORLD.

PROF. PRINGLE-PATTISON's important article in the January MIND, and Mr. Richardson's paper in the same number, raise a question to which I venture to draw attention. The point is whether idealism, taken either in the sense of Prof. Pattison or in that of Mr. Richardson, is able to yield a satisfactory interpretation of the world of external experience. The reaction in recent years to some form of realism is a token of dissatisfaction with current idealistic theories. And, perhaps, in this connexion it may be worth while to indicate some objections which idealism has to meet.

Let me begin with the view of the outward world set forth by Prof. Pattison in his Gifford Lectures and in the article referred to. So far as I can see his theory here has much in common with that of Dr. Bosanquet (*Individuality and Value*, p. 361 ff.). The Berkeleyan type of idealism is rejected, and a clear distinction is drawn between existing 'in a mind' and 'for a mind'. Hence a 'thing' is not identified with a 'form of conscious experience,' which is described as mentalism. On the other hand, the Kantian figment of the unrelated 'thing in itself' is condemned. So far we have a doctrine for which the name 'natural realism' might seem applicable. But Prof. Pattison warns us that his view is not to be taken as implying that the external world presupposes a system of independent existences; and he falls back on the idea of the 'essential relatedness' of matter and mind, nature and spirit. Nature, we are told, is *organic* to mind, and the material world in the end falls within the scope of the larger idealistic principle of the centrality and supremacy of mind.

Here we seem to have the theory that the nature of the material is solved by regarding it as organic to mind in that wide sense which it is sought to distinguish from mentalism. The use of the word 'organic' in this reference is suggestive, and conveys a helpful thought; but one may doubt whether the problem at issue is to be settled in this convenient way. To insist on the process of idealistic construction by which the socialised mind builds up the world of common experience is right and important, but the process involves data that are interpreted and not made. To construe there must always be something to construe. Nor can it be gainsaid that the world existed long before man appeared to begin the constructive work. If this be so—and it seems idle to deny it—some further explanation is needed of the sense in which nature is relative to mind. It cannot, one would suppose, mean

that nature is an unreal abstraction apart from the collective thinking of humanity. Prof. Pattison argues against substantiating the earlier stages of a process in isolation from the later and culminating stages, the stages which really give what goes before its meaning and value; and in this connexion he speaks of the world as organic to the self-conscious reason first revealed in man. But to say that the world receives its higher interpretation through human reason is not to prove that there was nothing to interpret before man appeared to undertake the task. To meet this difficulty it might be said that nature is organic to the Divine Reason, in other words, essentially related to it. One would wish to know whether nature falls wholly within the Divine Experience, or whether it is in some sense other than that Experience, though always dependent upon it. Obviously the stress of this problem will be felt differently by those who hold finite spirits have a substantive and by those who maintain they have merely an adjectival existence.

On one point Prof. Pringle-Pattison is quite decided: he does not think that monadism provides any real solution of the question. Monadism appears to him to yield no explanation of the environment necessary for the interaction of minds. Some years ago I urged the same difficulty (*Phil. of Religion*, pp. 452-3). On the other hand, if a theory of monads does not furnish a full explanation of the experienced world, it may very well be a factor involved in the explanation. The trouble no doubt is with the 'bare monads'. The idea of the 'bare monad' is a limiting conception: it denotes the point where we reach the ultimate and simplest form of individuality. Yet the bodiless entity called the naked monad is a psychological centre of experience, however low its grade, and it has the self-centred character that constitutes an individual. And the issue before us is, Can this multitude of psychical entities form the basis of what psychologists call the presentation-continuum? Mr. Richardson in his article (p. 63) says the notion of the bare monad is by no means impossible. But even were this true, it would not be relevant; for what he does not show is, that these monads are an adequate explanation of the world given in sense-perception. Those who find monadism sufficient usually lay great stress on the work of conceptual thinking, as developed and matured by intersubjective intercourse, in giving us the conceptual world of things in space. Mr. Richardson, for instance, boldly says that physical objects are "conceptual constructions based on sense experience, and therefore have a purely formal existence". And of course if this is a true proposition, *cadit questio*. But many of us will find insuperable objections to it. What one desiderates is not assertions but cogent reasons: in other words, some clear evidence how, out of a basis in bare monads, a soul or 'dominant monad' can elaborate the conception of related objects in space. Here, I think, we may assume that the Kantian view of space is unworkable: a form of intuition read into sense-data can never explain

the localisation of objects in space. If this be so, the monadologist must show how from his data in primitive monads this elaboration of a coexisting order of things is possible. And here he must be careful not to assume that his data contain more than they really do, as, for example, that because they are a multiplicity of individuals they supply the ground for a coexisting order of elements. For they are not points or entities existing alongside one another, but merely centres of experience at the lowest level. Nor is it easy to see how the presence of elementary monads as data to an experient subject gives rise to the conception of things at all, for the experience of monads is only the experience of other experiences, and it is not evident how this can be hypostatized into things.

A little further examination will make the difficulties inherent in the hypothesis still more clear. Here I venture to repeat an argument I have already advanced (*Phil. of Religion*, p. 452). Suppose we have a presentation-complex involving the real relatedness of its elements, which we may symbolise as aRb . As presented to the percipient subject S. this may be denoted by the formula $a'Rb'$. Here, be it remembered, the terms and their relationship are taken as intrinsic, i.e., not as arbitrary or external to one another. Now on the monadistic hypothesis the relationship R. of a and b can only be qualifications in the elements a and b induced by their connexion or interaction; and when they take the form for S. of $a'Rb'$, there is nothing to show why S. should envisage this relatedness as the coexistence or togetherness of a and b instead of a causal succession between them. For *ex hypothesi* the basis of the relation $a'Rb'$ is nothing more than experiences in a and b . The point of the difficulty is apt to escape us, because we surreptitiously assume that the coexistence or togetherness of the elements or terms is somehow a datum and is cognised as such by S. But if we keep strictly within the limits of the theory with which we are working, the conclusion seems inevitable that there is something in the coexistence of the elements in a presentation-complex that has not been explained in terms of monads, or inner centres of psychical life which have only duration.

Monadism is valuable in helping to interpret the evolution of experience from its lowest to its highest forms. But if the foregoing argument is sound, then the ideal side of experience has to be supplemented on its real side. Moreover, as already stated, the interaction of the hypothetical 'bare monads' must be explained. Leibniz was no doubt consistent with his premises in denying interaction, and in tracing all experience to the development of the inner life of the monads: but he achieved consistency at the expense of introducing an intolerable artificiality into his system. If we discard his solution, we must accept interaction and try to understand it. The explanation of Lotze suggests itself at this point; yet, if his theory be admitted, it is impossible to maintain the substantial existence of finite selves: in the end they are

reduced to adjectives of the one Real Being. For those who find insuperable difficulties in this reduction another alternative appears to be open; it lies in emphasising the realistic basis of experience, while still asserting its essential relation to the ideal side of experience. There is no adequate reason for taking the monad as the lowest level of reality. Let the conception of naked monads be discarded, for even the lowest centre of experience has a real side, a side which lies beyond the level of individuality. Monads so long as they remain monads cannot become confluent. A continuous real environment must be posited in which all monads share, in which they interact, and from which they are differentiated and distinguished from one another as centres of inner experience. This continuous real being would furnish the condition for the psychological experience of extensity as well as for the more developed idea of coexisting and interrelated elements in a presentational whole.

Of course, various objections and criticisms might be urged against a theory like this. How far all of them could be successfully met I am not certain. But it may be worth while to make some further explanations, in order to guard against possible criticisms which are based on misconception.

(1) Matter, in the commonly accepted sense of the word, this basis of experience certainly is not. It is essentially related to experience, though it is not to be construed as itself experience. It is more akin to the Platonic $\delta\lambda\gamma$ which was 'the receptacle and the nurse of form'. And the intrinsic relation—or the inner teleological relation—in which it stands to the development of experiential centres would also distinguish it from the Kantian figment of an unrelated 'thing in itself'.

(2) Again, it may be objected that this theory traces the genesis of psychical life to something which, if it is not matter in the crude sense, is at all events something lower than experience, and may be described as a kind of 'mind-stuff' that contains in itself all the promise and potency of mental development. Consequently, the theory is wrong in principle and fails entirely to account for the genesis of mind. So stated the argument is unanswerable; but it really rests on a misapprehension. The theory lays no claim to explain the genesis of mind in the sense of furnishing its sufficient reason. What it does seek to do is to offer an explanation of certain features in the experience of minds, notably the experience of a world of continuous and connected elements. The ultimate source of psychical life is neither to be found in that life itself nor in the basis out of which it emerges.

(3) The final source of psychical centres and of the medium in which they interact can only be found in God as the ultimate ground of all things. To Him must be traced the energising and quickening activity that brings to life and birth the variously graded realm of souls, souls which are rooted in the same real ground and by their manifold interactions build up the world of

common experience. And here the question arises how we are to conceive the relation of God to the realistic basis of psychical life. Certainly this basis must be absolutely dependent on God, and that in a sense in which it is not dependent on the thought of man. We may perhaps call it the creation of God, but the notion of creation is infected with misleading analogies drawn from this temporal and mundane experience. We are less open to misunderstanding if we construe the relation as one of intimate and vital dependence. On the other hand, to identify the basis of human experience with the thought or experience of God would only bring back on us the old difficulties in a slightly different form. We should still have to ask how the experience of another experience could serve as the means by which our conceptual world of objects is elaborated: and though the argument that Divine Experience is radically different from human may be true, it evades a problem by an appeal to the possibilities of something we do not comprehend. The objection that the view that has been outlined imports a radical dualism into the universe fails to take account of the complete dependence of the real and ideal sides of experience on one Supreme Ground or Will. In some sense the *other* of God, though always dependent on Him, the realistic basis on which mundane spiritual life evolves forms a mediating factor between the Divine Mind and finite minds: it forms the necessary medium in relation to which God brings into being the significant development of souls.

G. GALLOWAY.

THE NOTION OF A GENERAL WILL.

I RECOGNISE the courteous tone of Prof. Broad's rejoinder in the October MIND, and I will try to meet his criticism by my explanation. But I still maintain that the matter is sufficiently explained in my book, and better than I can explain it in a single paper.

I think that the root of disagreement between us is plain. I hold that my will, and any others which mine implies, or which imply mine, form a system which is general as against my will taken by itself. Prof. Broad does not admit that several wills can be the same, *i.e.*, can form a general will as compared with any one of them, unless they all consciously and explicitly will that the same propositions shall be true. He would not permit the use of such ideas as that I will what is implied in my will, or that my will is a particular within the system formed by other wills which imply it and are implied in it, as conditions *sine quibus non* of the truth of the propositions which it wills to be true. Just in a single reference, where by exception he asserts the reality of a will which is a system willed as a whole, he seems to give me a handle for an argument from his premisses.

For he describes Smith, stockbroker of Brighton, as possessing a system of connected volitions, which has organising principles in it. This is contrasted with Smith's various wants, and his efforts at various times to satisfy them, which are events in his history. I should call the system a standing will. I cannot spend space on Prof. Broad's suggestion of a way in which I might get, out of these facts, a contrast of a private and a general will. My point, so far, is simpler and less ambitious. I do not call Smith's will general as compared with particular in virtue of the contrast between the system of connected volitions and the various sporadic wants. This is not a case of a particular will compared with a unity of many such wills; though it has features analogous to such a relation. But I do draw attention to the point that the various wants are severally "abstract and fragmentary" as compared with the standing will. Imagine Smith's plans and ideas which form his standing will, and then think of such a volition as that of going up to town by train on a given morning. Is it not plain that the latter becomes a meaningless fragment if you strike out what he is planning to do? Certainly it is fragmentary, and I should say abstract as well, but that may be a verbal question.

Yet even here, before I go further, even at the level of Smith's

various wants, I must point out that in the instance I happen to have taken, if we argue strictly, a general will, at least relative, is implied. How can Smith will to go to town by train without willing the existence of the railway, the truth, that is, of thousands of propositions, the objects of other wills than his own, which must be true if it is to be possible for him to go to town by train? Obviously his will to go to town, if we are to be pedantically strict, involves the existence of thousands of other particular wills, which are to his as one general will to a particular within it, in the sense that they are directed to objects indispensable to the accomplishment of such volitions as his, while such volitions as his, in turn, are essential to the accomplishment of such objects as theirs. And this though none of the parties concerned may know of each other's individual existence.

But we may waive this argument. It may be said that it is artificial to treat a casual volition as directed to the conditions implied in it. If you take a cab, does your will imply a common element with the will of the cabman? A cab strike perhaps throws light on this question. But I need not insist on it.

I return to the standing will. By introducing this idea Prof. Broad has come a long way to meet me. When the standing will is granted to be real, it is difficult to deny the general will.

For such a system of connected volitions, bound together by organising principles, which, I take it, are considered to be willed more or less explicitly, is *ex hypothesi* comprehensive, and involves the planning of an entire individual life. Now this quite inevitably involves an immense system of implications, consisting in the operations of other private wills, whose objects are implied in those of the standing will first considered, and also imply them. We cannot say in such a case that the agreement between all the particular wills is only in a few abstract propositions, while their main bulk as private wills is unaffected by it. For we have accepted the conception of the whole private will in each case as a will connected throughout, and expressing principles which pervade it, more or less reflectively. It is quite inconceivable that such a system of connected volitions, at every turn implying and implied in other similar systems, should not form together with them a single inclusive system bound together by the nature of the propositions, not all identical, but necessary to one another's truth, which all the particular wills desire to be true. I confess this seems to me too obvious for argument. The man's plans and principles all depend upon the support of other wills, and, apart from such agreement, there is no feature of his life which he could possibly hope to realise. And his organising principles, by which he directs his whole life as a member of a community; they need not, certainly, be word for word the same as those sustained by other wills; but if communal life is to be carried on, they must support and be supported by those willed by others.

It seems to me, then, to be clear, that the standing wills of indi-

viduals must enter into a system which forms the standing will of the community. But because of the limitations which make each will a private will, limitations of our personal knowledge, character, and interest, each personal will is related to the whole body of wills as a particular element to a general system which includes it. The whole general will is explicit only in all the wills taken together. Each private will stops at a certain point, and, for what is beyond that, wills the whole by implication, or, so to speak, diagrammatically. I gave as examples of this before my own will for the restitution of certain provinces by Germany to France, and in favour of the League of Nations. My will to each of these objects is diagrammatic; it implies a concrete filling which it cannot supply, but which is present in the whole set of wills bearing on the subject taken together.

The question, then, how far the private will of a member of a community is an element within a general will of that community is ultimately the question how far you must be said to will what is implied in your will. It is a kind of question in which interpretations of fact are very likely to vary, and in which the actual facts are very hard to handle, owing to their enormous complexity and their perpetual movement. The reading which Prof. Broad affirms in his final paragraph seems to me, I confess, like the judgment of a looker-on who is not much interested in the game. But I quite admit that an extremist "evacuating interpretation" is a useful *terminus a quo* to work from in such discussions.

In opposition to this minimising interpretation I will make four suggestions, two in the way of removing hindrances to a more appreciative interpretation, as I consider it, of the common element in wills; and two alleging positive grounds for it.

1. There is no difficulty about willing subject to reservation. Many a man swears daily at the defects of his own house; but he wills to live in it as it is if he cannot cure them or get a better. We must not confuse what we will with what we should like. They are hardly ever the same. The point of this for the present purpose is that you must not reduce the agreement of wills to the residuum in which no distinctions survive. That is the old bad business of excluding from the generic concept all properties which are differently developed in the species. A socialist, and a non-socialist liberal, do not necessarily differ in their will for the immediate treatment of particular forms of property under existing conditions. To represent their relation truly you would have to explain in detail what they respectively wanted to see done, and with what alternatives under different conditions. Each of them wills what he thinks practicable, though he makes reservations for changing circumstances. Of course the whole set of wills is always changing, and is more or less in contradiction with itself. But all their contradictions spring from efforts at adjustment, and this character must be considered in estimating the unity of the will. One man is against proportional representation, and another in

favour of it, on one and the same principle, only they differ about the facts. Of course you must allow for this in estimating the unity of their wills.

2. A similar case is the relation of neighbourhood groups to the whole community. Are you to strike out from the general will the intense formulated public feeling in a locality in favour of public drink control, because it is not spread over the whole country? Surely not; as we allow local by-laws to have force of Acts of Parliament, so our own will to self-government implies our approval, under certain safeguards, of the public will of other localities. We will it, as I said, diagrammatically. It is even possible, and obviously usual, to support by our private will different arrangements in different localities, adapted to different conditions; and, in fact, this principle runs throughout our whole social and political life. This is an extension of what is involved when we say that Smith's organising principles pervade and connect his efforts to satisfy his various wants. The principle, though strikingly obvious in the case of neighbourhood groups, applies to occupational groups as well. The standing will of the community is actual in all these phenomena.

3. I attach very great positive importance to the will implied in conduct. Here again Smith's standing will is a parallel. I admit that the principle may be pressed too far, but I am sure, from its recognition by the practical world, from introspection, and from philosophical theory, that it has very great significance.

Ignorantia juris neminem excusat = practically "A reasonable man obeys the law without knowing it". His various actions reveal a will which in common with other particular wills throughout the community affirm the law of the land. "On the whole" his will supports the law, that is, the system of life which the law defines and protects. This is the judgment of the practical world in the maxim I have quoted. The fact that "on the whole" has different limits for everybody does not alter the fact that it is false of nobody. This is merely one, of instances, which, if set out, would cover the whole fabric of life. It meets the particular point of the participation of the less educated classes in the general will. But all the other instances would confirm it in this respect.

Introspection and philosophy I take together. I make bold to say, in virtue of both, that it is quite impossible to isolate a volition, as it is impossible to isolate a judgment. Every volition implies and is implied in a supporting system of wills, as every judgment implies and is implied in a systematic real world.

4. It is of fundamental importance to distinguish the true genesis of law and administrative order from the political chances which immediately bring them into application. An important law—an act of sovereignty or expression of the general will, in Rousseau's higher sense—has a growth like a great tree, both in time and in the area from which it draws support. The life-blood of hundreds or thousands of devoted lives is in it, and also the adjusting and

readjusting pressures of wills in the whole communal area or over great homogeneous districts of it. The easy-going publicist criticises it, of course, and very likely censures it, from a standpoint which has been won for him by the struggles and experience which moulded and are continually remoulding it. Think of the sincere and laborious lives and the innumerable counter-pressures and adaptations due to particular wills of every class which have gone to form our education policy, or our poor-law policy, or our policy about alcohol, or our commercial policy, or our local self-government, or our industrial organisation. (It seems an extraordinary thing to say that the "governing classes" have the directing power to-day, unless you make it a tautology by including in them all classes that *de facto* exercise control.) The Scottish fishwife says, "It's no fish ye're buying; it's men's lives". So we should say, when we think of our laws and institutions; they are not words and phrases, but the quintessence and utterance of men's and women's lives.

I adhere then to the statement that every reasonable private standing will in the community is related to the whole system of such wills as a component particular to a system which includes and defines it. The variations, through the correlation of which this whole is a system, are simply the variations of life, and the State, as a political structure, is an expression in outline, not really separable from the social whole, of the relatively permanent shape which the life of a community existing in all its particular wills, is maintaining and developing. I am sorry to have written at such length, but it is not a subject which it is easy to discuss shortly.

BERNARD BOSANQUET.

NEGATION IN TRADITIONAL AND MODERN LOGIC.

THE traditional doctrine of negation is clear and simple. Judgments of identity, presence, inclusion, etc., are expressed in a propositional form which is affirmative (*A is B*). Judgments of difference, absence, exclusion, etc., are expressed in a propositional form which is negative (*A is not B*). There is an exact correspondence between propositional form, on the one hand, and the nature of objective relations apprehended, on the other. All judgments are positive, or apprehend genuinely objective relations; but of the objective relations thus apprehended, some are relations of identity, inclusion, etc., while others are relations of difference, exclusion, etc. The propositional forms in which these different relations are expressed all assert positively—all alike convey definite information which is objectively valid (*Roses are sweet, Thorns are unpleasant*). That is to say, negation is on a par with affirmation, or, as it is technically expressed, affirmation and negation are co-ordinate.

When, however, we come to "modern" logic—the logic of Lotze, Sigwart, Bradley, Bosanquet, Wundt, Erdmann, etc.—we notice at once that the naïve faith in the validity and importance of the above distinctions has vanished, and that its place is taken by a far-reaching scepticism. It is no longer believed that we can speak of exact correspondence between propositional forms and objective relations, for it is no longer believed that we know what the objective relations are. It is no longer believed that judgments of identity, inclusion, etc., can be sharply distinguished from judgments of difference, exclusion, etc.—for careful observation seems to reveal elements of both identity and difference, inclusion and exclusion, in all judgments. It is, further, no longer believed that affirmation and negation are co-ordinate. The negative judgment is said to be a *Beurteilung*, a judgment about a judgment, a critical or reflective judgment, which expresses the scepticism of the modern man in the face of human attempts to apprehend the nature of reality. Its value is not objective, but subjective, bidding us refrain from the naïve will to affirm, and to avoid dogmatism in any shape or form, in favour of the critical attitude, the *docta ignorantia* of Cusanus. The modern view of negation, then, is summed up in the statement that negation is subjective and indefinite.

If we consider each of these views by itself, we find in each something to which we could wish to yield assent. *This toothache is not pleasant; This car will not take you into London; I have not enough*

money in my pocket—about such judgments there is surely something objectively valid. And yet, on the other hand, we know that it is by the method of trial and error that we approximate to truth; that complete success does not crown our efforts in the field of ideal experimentation; that our every judgment is so infected with error that the sceptical, critical attitude is the only one tolerated by the scientific spirit. Both traditional and modern logic seem to be justified. And yet they appear to contradict each other. "Negation is on a par with affirmation, and is objective," says tradition. "Negation is not on a par with affirmation, and is not objective, but subjective," say the moderns. Can we accept both these positions, or are we faced with an unyielding contradiction?

I.

Let us approach the question by first of all investigating the relation of the propositional forms, affirmative and negative, to the judgment, *i.e.*, apprehension of objective determinations. Measurement assures me that there are certain differences in size between my study and the dining-room. Both rooms are equally high, but the walls of the study are not so long, the floor-space and ceiling-space are less, and there are certain other differences. Apprehending these objective determinations, I judge that there is a difference in size between the two rooms. How can this apprehension be expressed in propositional form? *The study is smaller than the dining-room; The dining-room is larger than the study; The dining-room and the study are of different sizes.* Such propositional forms all express the relation apprehended, and express it in a way which is "affirmative". But the same relation can equally well be expressed in propositional forms which are "negative": *The study is not as large as the dining-room; The dining-room is not as small as the study; The two rooms are not of the same size; etc.* In fact, considered as propositional forms, affirmation and negation appear to be interchangeable. They are rhetorical devices for producing a forcible impression, somewhat like interrogation or exclamation. They have different associational fringes, and in dealing with *A* we select negative expressions in order to provoke a certain reaction—a reaction which, in the case of *B*, would be produced more certainly by expressing our meaning—the same meaning—affirmatively. Whether our thought is subjective or objective in character, it can be expressed indifferently in affirmative or negative form, and in fine, at the propositional level, considered as linguistic devices for communicating our meaning, affirmation and negation can be regarded as alternatives, as "co-ordinate".

This conclusion, however, belongs to the use of language, rather than to logic. Are affirmation and negation mere linguistic alternatives, rhetorical devices for forcing others to attend to our meaning, or is there, perhaps, a sense in which the distinction

enters more deeply into the nature of our meaning itself? Leaving entirely on one side these surface-distinctions in the form of expression, let us inquire whether perhaps, deep down in the nature of thought itself, there are forms of *thought*, forms of *judgment* which can be classed as affirmative and negative.

What is the nature of judgment? Starting with a concrete situation, some problem presented to us primarily at the sense-perceptual level, we proceed by analysis to disentangle its various threads and then weave such of them as interest us into a new pattern which corresponds more nearly to the ideal demand for unity, consistency, and organisation. If our mental construction gives us some degree of mastery over the situation with which we started, so that we can see our way clearly, and can act accordingly, our ideal experiment has so far succeeded. We are in touch with reality, and our judgment is so far objective. But if our mental construction, however consistent in itself, and however logical it may seem to the eye of the intellect, cannot be applied in any definite way to the concrete problem, our ideal experiment has so far failed, and our thought is subjective, out of touch with reality.

So far we have treated judgment as though it merely furnished a specific solution to a specific problem; and if we are unduly under the pressure of immediately practical needs, it tends to be little more. But if we are subject to the *cacoethes philosophandi*, and have leisure to follow our thought whithersoever it leads, we notice at once that our various judgments are not cut off from one another with a hatchet, but exhibit a certain intellectual continuity. The threads of pattern *A* and the threads of pattern *B* appear to extend beyond the immediate organisation of sense-given material. There is a suggestion that they may form part of a wider pattern, and that our "practical" solution has after all gone only a little distance along the path which may, perhaps, be traversed by the philosopher. From this standpoint, it seems as though our judgment, although it may have furnished a rough solution for the immediate problem, is still far from perfect. It points beyond itself to a more perfect stage of judgment, in which its less profound viewpoint would be taken up and completed. The judgment of perception leads on to the judgment of experience; this again leads on to the symbolic judgment, the judgment of the scientist; and this, in turn, seems to point to something further, to the transcendent judgment in which Omniscience would embrace the content of all possible judgments in a single perfectly organised form.¹ So far as our attempts at judgment fall short of this final ideal, they are imperfect and subjective. So far as they attain the ideal, and concentrate upon the solution of their problems an intellectual context drawn from an ever-widening area of experience, so far they are objective.

¹ For a discussion of these stages of judgment, see a paper by the writer, "The Division of Judgments," in the *Journal of Philosophy*, etc., vol. xv., 1918, esp. pp. 548-550.

Let us examine a little further. Our human attempts at judgment move always somewhere between these two extremes. Experiences purely sensuous, wholly unilluminated by intelligence, are unknown to us. Our thought is never wholly subjective, but is at least in some degree intelligent, objective, in touch with a reality beyond the merely sensuous. On the other hand, there always remain, even in our most refined experiences, certain sensory elements which no effort of ours succeeds in transmuting into the most precious of intellectual metals. Our thought always retains a certain residuum of subjectivity, and so far we always fail to reach the goal of intellectual intuition, in which we seek the final solution of our problems. Our human thought, then, is neither wholly objective, nor wholly subjective, neither wholly a success, nor wholly a failure. It is successful in proportion as it is intellectual, and falls short of complete insight in proportion as it remains sensory.

Can we, in this brief account of judgment, discover distinctions which might reasonably be characterised as affirmative and negative? Let us consider. Negation is said to be subjective, and to register the failure of some ideal experiment of ours. Judgment, according to our account, is subjective so far as our reorganisation of the sensory data fails to bring us in touch with reality.¹ Can we, then, regard our more superficial judgments as so far negative, and our more scientific and philosophical judgments as so far affirmative? To speak more strictly, are we to treat all judgments as affirmative in so far as they bring us into touch with reality, and negative in so far as we fail of attaining a completely satisfactory insight?

Let us consider the case a little more closely. I construct the hypothesis that *A is B*, and attempt to verify it. Reality accepts the ideal suggestion. Well and good. My judgment, then, is affirmative. So again with a second ideal hypothesis—this time that *A is not C* (or is different from *C*). Here again reality accepts the suggestion. The second experiment also succeeds. My judgment that *A is not C* is also affirmative.² Let us examine further. I construct the hypothesis that *A is D*, or that *A is not E*, and attempt to verify it. Reality rejects the suggestion, and my experiment is a failure. My results are negative. I am thrown back upon myself, and have to devise further experiments in order to determine what is the relation of *A* to *D* and *E*. For the

¹As, e.g., when sensory elements are imperfectly apprehended—e.g., in the construction, for a problem in simultaneous equations, of an equation which is not strictly representative of the data. If something vital is omitted, we are at once out of touch with reality.

²If reality is a system, in which each element has its own place, and is sharply distinguished from elements which occupy different places, then such a judgment as *A is not C* may be precisely as objective as such a judgment as *A is B*. In spite of the "negative" propositional form, such a judgment as *A is not C*, if true of reality, must be regarded as "affirmative" in the sense under consideration.

failure of my experiment tells me nothing about *that*.¹ I have failed, at least for the present. My results are negative. I succeed merely in discovering, like Socrates, my own ignorance.

Are we then to say that *A is D* and *A is not E* are negative judgments? Hardly. It seems more true to say that they are not judgments at all. We construct an ideal hypothesis, or floating adjective, and attempt to bring it into connexion with reality. If we succeed in establishing contact, we make a judgment. If we fail to make connection, our floating adjective remains a floating adjective, our hypothesis remains a hypothesis. We have constructed, perhaps, the predicate of a possible judgment, but unless we connect it with its subject, reality, our work is only half done—we have not judged. When we say, then, that our results are negative, we mean that we have not succeeded in judging. We are still in a state of suspense. *A is D* and *A is not E*, then, represent failures to judge, and from this standpoint we are forced to conclude that, while there may be such a thing as absence of judgment, there is no such thing as negative judgment.

Let us consider a little further, in order to become quite certain that this is the case. All judgment, so far as it *is* judgment, *i.e.*, so far as it succeeds in establishing contact with a reality beyond the act and thus interpreting reality itself, is positive. So far as we can really see our way through a question and think things out, we approximate to this ideal. Our human thought, however, is never entirely successful. So far as there remain in our thought elements which obstinately refuse to be taken up into the higher synthesis which reconciles their oppositions and places them in their proper position in relation to the rest of reality—so far our task remains incomplete. We have not fully organised our data. We have not judged. All our thinking, then, is only partially in contact with the real. So far as we succeed in thinking, in transmuting the data of sense into intellectual essence, so far we judge, and our judgment, so far as it *is* judgment, is positive. So far as this transmutation is not carried through, so far as our thought remains inoperative—so far we do not think, do not judge. Judgment, then, so far as it *is* judgment, is always positive, and the distinction of affirmative and negative is without significance.

A corollary of this position is that there is no such process as double negation, the negation of a negation. For our present position, it is true, the distinction of affirmative and negative is without value. But there remains a possible distinction between positive and negative, between success and failure in our attempts to judge, between judgment and absence of judgment. It might be imagined that if a single "negative" represents a failure to judge, a double negative might still be possible, as a scientist might first

¹It may be that *A* really is *D* or really is not *E*, but that the experiment was perhaps badly organised. Many a correct hypothesis has been abandoned for a time, in default of adequate instruments or more complete evidence.

make a false hypothesis, and then, in testing it, might fail to discover that it was false. Let us test this suggestion. Let us experiment, and see if it is possible to construct a double negative.

We begin by constructing a single negative. For example, we construct the floating adjective *A-C*, but fail to connect it with reality, and thus obtain negative results. We are left, as we say, up in the air. We have on our hands a mere idea, a floating adjective (*A-C*), *plus* a sense of failure and ignorance. We do not know whether the fault is in the adjective, or in our attempts to attach it to a substantive reality. Let us proceed. We try to "negate" this negative result by further experimentation. We construct the hypothesis that the reason for our non-success is faulty construction in the original hypothesis *A-C*—*e.g.*, that it was not properly representative of the concrete situation from which we started, or that it contains some kind of inconsistency. Our new hypothesis is thus *A-C-I* (*A-C* is improperly constructed). In order that we should be able to obtain, with this hypothesis, a second negative, we must, for the second time fail. Good. We fail in our attempt to attach the floating adjective *A-C-I* to the reality (*A-C*). That is, we fail to grasp the nature of our original hypothesis, and are left ignorant as to whether it was, or was not, improperly constructed. Our only certainty is that our attempt (to establish the improper construction of *A-C*) has resulted in failure. Like Socrates, we know that we do not know. We recognise, that is to say, that we have not judged, we perceive that we have failed to perform any operation upon the first negative result. In other words, we have not "negated" our first negation—we have failed to do anything whatever to it. From this Socratic standpoint, it becomes clear that, just as no amount of multiplication or division of one zero by another will give us positive units, so no multiplication of the absence of judgment will ever lead to positive information. There is no such thing as continuity or "doubleness" in a series of negations, just because there is no such form of judgment as a single negation. *Not to judge* completely excludes us from the sphere of operation of judgment, and upon not-judgment we can, by further failing to judge, perform no operation whatever.

II.

We may now attempt to answer the question raised at the outset, as to whether there is or is not an inconsistency between the doctrines of traditional and modern logic *re* the subjectivity of negation. For traditional logic, there is a distinction between affirmative and negative propositional forms, corresponding to the distinction between relations of inclusion and relations of exclusion. For modern logic, there is a distinction between objective and subjective, between judgment and absence of judgment. Let us compare the two standpoints by translating the traditional conclusions into the terminology of modern logic. Let us attempt to

apprehend a relation of inclusion (*A is B*), and a relation of exclusion (*A is not C*). So far as we succeed in establishing contact with reality, both forms of judgment give positive information and are equally objective. In this case, then, what traditional logic regards as negative—the relation of exclusion—is, for modern logic, no more subjective than what traditional logic regards as affirmative. Suppose that we only partly succeed in establishing contact—as is the case with human attempts to judge. Both attempted apprehensions, inclusive and exclusive alike, now represent partial failures to judge, and so far throw us back upon ourselves, or are subjective. Neither form has here precedence over the other. Suppose, finally, an entire failure to effect a judgment—suppose us left in suspense with two floating adjectives (*A-B* and *A-not-C*). Both alike now represent complete failures, and are equally subjective. That is to say, the traditional view, that judgments of inclusion and judgments of exclusion are on a par in respect of objectivity and subjectivity, is amply borne out by our examination. The traditional opposition between affirmative and negative is transcended as we proceed more deeply into the subject, and the difference between traditional and modern logic is a difference of levels of thought. There is no “unyielding contradiction”. The distinction between affirmative and negative which we find in traditional logic is in no respect inconsistent with the distinction between objective and subjective, between judgment and absence of judgment, which we have found to be characteristic of modern logic. There is a difference of problems, but no clash between their solutions, and we may safely accept both.

III.

It cannot escape the reader who is familiar with modern logic, that the above conclusions, which avoid all conflict between traditional and modern logic on this point by recognising a sharply defined difference of outlook, are largely at variance with the views deduced from the same premises by writers such as Sigwart, Bradley, Erdmann, etc. The chief reason for this divergence appears to be that these writers, engaged as they were in a polemic against tradition in order to make room for the newer views, at times would criticise the traditional views from the traditional level, and were not always careful to keep in the foreground the rigorous distinction of levels of thought which is characteristic of the modern view of which they were the champions. *E.g.*, they do not sufficiently insist that a judgment of the form *A is not C* is from the new standpoint positive or objective, and in no sense negative or subjective. Dealing, as they do, with a logical tradition in which propositional form differences are of importance, they continue to write as though such distinctions had not been superseded by the adoption of the new point of view, and this shifting of viewpoints at times introduces confusion, and leads to

conclusions which are not, perhaps, strictly deduced from the modern premises.

One of these conclusions is of sufficient importance, and sufficiently germane to the present subject, to merit especial consideration. It is claimed by many of the modern writers that the negative proposition-form is "indefinite". The argument is as follows:—To say that *John is not walking home* (the bare negative) does not tell me *how* John is approaching his residence, or even that he is doing so at all, or even that there *is* such a person as John. This last portion of the criticism is unjust. The statement that *John is not walking home* does imply that there is such a person as John, that he does have a home, and that he does sometimes walk in that direction. Taken apart from any context, as a mere form of words to which we have to supply a meaning by guess-work, the statement does not tell us whether John is approaching his residence in a taxi-cab, or whether he is perhaps walking in a different direction, etc. To this extent the bare negative is indeterminate, and it is chiefly for this reason that the negative proposition-form is regarded as "indefinite".

Regarded, however, as a criticism of the negative propositional form, such a charge of indefiniteness is unfair. It might, for instance, equally well be brought against judgments affirmative in form. *There is something wrong with my watch* is "indefinite" in that it does not state *what* is wrong. It may be the works which are out of order. It may be that the key is missing, the crystal broken, etc. *Any* statement, in fact, when taken out of its context, is ambiguous and "indefinite"—i.e., stimulates us to think out a variety of possible contexts, but without supplying a principle which shall enable us to select *one* context as the right one. It is the absence of determinate context which is the source of the ambiguity, and not the affirmative or negative form of expression. This we see at once if we supply a definite context. Is it *John* who is walking? Is he *walking*—or riding? Is he coming *in this direction*? To each of these questions, the negative answer is perfectly definite. *No, it is not John*, etc. This does not tell us who it *is*. True—but that was not the question. The question asked has been answered, and where the question is determinate the answer *No* is just as definite as the answer *Yes*. The definiteness of the statement thus depends upon the determinateness of the context to which the statement refers, and not upon whether the statement is expressed in affirmative or negative form. In fact, as we have already seen, *any* meaning can be expressed, by a skilful rhetorician, indifferently in either form.

So far, we have not really approached the question from the "modern" point of view. For the modern logician, all judgment, so far as reality is truly apprehended, so far as we positively judge, is definite. It is absence of determinate thought, absence of judgment, which is the source of vagueness, ambiguity, indefiniteness. It is because "negation" for him means absence of determinate

judgment, that the modern logician charges it with indefiniteness. It is not the propositional form, but the failure to think adequately, which is the proper object of his censure. So far as we fail to think our way through a question, we are not certain. Our work is only half done. We fail to reach a determinate conclusion. But the problems of traditional and modern logic are here so disparate, that there is no clash whatever with the traditional treatment of negation. The difficulty of *nicht zu Ende denken* affects our affirmative no less than our negative forms of expression. As in the case of subjectivity, so in the case of indefiniteness, these propositional forms are on a par, and it is a mistake, if we suppose that there is on this point any inconsistency between the fundamental position of modern logic and the distinctions of traditional logic, which rest undisturbed at a different level of thought.

RUPERT CLENDON LODGE.

V.—CRITICAL NOTICE.

The Metaphysical Theory of the State. By L. T. HOBHOUSE.
London: George Allen & Unwin, Ltd., 1918. Pp. 156.

PROF. HOBHOUSE has given us what is in many ways a wonderfully fine book, which deserves to be read and re-read as a counterblast to the Anglo-Hegelian glorification of the "State" by every one who is interested in the theory of πολιτική in the wide Hellenic sense. With the main principles of Prof. Hobhouse's argument the present reviewer, at least, feels himself heartily at one. It has rarely been his good fortune to meet in modern literature with a better or more convincing exposition of the fundamental proposition that morality does not rest on the State, but the claim of any State to allegiance on morality, or a more careful examination of the fallacies which beset the once popular identification of the "State" with the embodiment of the "real" will of its subjects, and of this "real will" with the good. If "general will" is either only a name for the ends willed at a given moment by the "damned compact majority" or a "*vox nihili*," if a man's "real will" (assuming that the words mean, as they should for the purposes of the identification of the "State" with God, what a man *actually* wills), is often far from being directed to true good, and if the "State" is only one of a number of interpenetrating social organisations, and I think Prof. Hobhouse establishes all these theses, the whole argument for regarding the nation-State as a superhuman source of rights against which no individual can have any rights of his own collapses completely. We find ourselves back again face to face with the good old Christian and English doctrine of indefeasible "natural" rights, and discover how much more truth there is in the theory of the "social compact" than the new Machiavellianism of nineteenth-century *Realpolitiker* has been willing to allow. At the same time I cannot but feel that, good as Prof. Hobhouse's book is, it might have been better still but for a certain tendency which runs through it to give up to party what is meant for mankind. The exposure of the fallacies of the worshipper of the State does not depend on any premisses involving propositions likely to be denied by an intelligent man whatever his "party" in local politics may be. Nor is the exaltation of the "State" into a god, or, at least, a vice-gerent of God, who can "do no wrong," confined to any one political party. It may appear as legitimist glorification of the "divine right" of a

monarch, as Napoleonism, as the alleged philosophical justification of collectivist regimentation or "proletarian dictatorship". But Prof. Hobhouse has a way of writing as though the doctrines which he attacks were somehow the peculiar property of "Conservatives" and as though Conservatism were another name for the exploitation of a whole community in the selfish interests of a particular class. "Rebel," "revolutionary," seem to be with him always epithets of praise, and the "rebel" to be identical with the "idealist" and even with the "philosopher and statesman". He has, in fact, a very poor opinion of the wisdom and honesty of all past or present rulers. From the true considerations that, speaking generally, institutions are not fashioned *en bloc* by a single intelligence, but grow, and that they are the results of compromise between parties none of whom ever foresee much of what will come out of their conflicts or co-operations, he tends to draw the conclusion that almost any individual who condemns existing social institutions and propounds a Utopia of his own is likely to be wiser than the society against which he revolts.

Now no one should complain that the temperamental bias of a writer on problems of social philosophy shines through his theories. The thing is inevitable, and it may fairly be said that Prof. Hobhouse's bias is a useful corrective to that of Prof. Bosanquet, against whose *Philosophical Theory of the State* Prof. Hobhouse's book is a direct polemic. But it ought to be clearly understood that so strong a temperamental bias seriously affects the historical value of much that Prof. Hobhouse says. It is not historically true that the theory which makes the State, as the embodiment of the "general will," superior to moral obligations has any special connexion with political Conservatism. As Mr. Hobhouse himself has to admit, it was not the "reactionary" Hegel, but the revolutionary Rousseau who invented the doctrine of "forcing" the dissentient "to be free". The theory was acted on by French revolutionists long before Hegel found it convenient as a defence of the personal rule of Hohenzollerns. At the present moment it is not likely to be acted on by "Conservatives," but very likely to be abused to the worst ends by "proletarian" dictators wherever political power falls into their hands. The men of the French Revolution had made the forcing of "freedom," as they understood it, on the "slaves of George and Francis" an excuse for aggressive warfare long before there was a German Empire with a *Kultur* to be imposed on the world at large. If we imagine that Tsars and "aristocracies" are the only or the most dangerous enemies of the national freedom of the individual we are likely to have our eyes painfully opened for us before long. Precisely because I set a high value on my own personal freedom, I would myself sooner fall into the hands of any monarch or aristocracy than into those of Mr. S. Webb or Mr. Smillie. "What Frenchman," said Johnson once to a speaker who was denouncing monarchy, "is hindered from passing his life as he pleases?"

There is every indication that under the well-regimented Socialist bureaucracy of the Fabians, or the working-class tyranny dreamed of by Mr. Smillie and his friends, very many Englishmen would be very effectually prevented from living as they please.

So, again, there seems no reason to presume that the social "rebel" is necessarily an "idealist" or a "statesman and philosopher". A man may be a rebel for the sake of a high ideal, no doubt. He may also, in a time of revolution, stand fast by the established order for high ideal reasons. On the other hand acquiescence and revolt alike may be, and often are, prompted by purely selfish and sordid motives. There are "rebels" who deserve no more sympathy than the *Apache* whom they resemble. There must surely be something wrong about premisses which lead *a priori* to the conclusion that Marat or even Hébert had the advantage of Burke in "philosophy and statesmanship". The fact is Prof. Hobhouse starts with a pessimistic estimate of social institutions which seems as unfounded as the optimism which he very justly ridicules. It is, I would suggest, not at all a fact that a governing class always "makes the laws" in its own class-interest, and with no regard at all for the good of the community. That was just the false assumption of Thrasymachus rightly exposed by Socrates in the *Republic*. What is true is that class-interest does often vitiate legislation. This does not in the least mean that it is the mainspring of all legislation. Thus, for reasons which have been forcibly expounded by Hobbes, the most absolute of monarchs is bound, even if it were solely for the sake of his dynasty, to aim at the well-being of his subjects, and in our own history we owe an inestimable debt to the legislation of such personal rulers as Henry II. So again, during the period from 1688 to 1832 when the "country gentlemen" were the real rulers of England, much that was indefensible was done from class-interest, but it would be a ridiculously short-sighted verdict to say that the whole, or even the main, attention of the ruling class of the period was concentrated on their class-interests. After all they governed on the whole well, certainly not worse than the manufacturers who succeeded to their position after 1832 or the demagogues who have replaced the manufacturers. It would at least be no very startling paradox to maintain that Sir Robert Peel was a *more* public-spirited and more intelligent "statesman" than the present Prime Minister, though Peel did belong to the "capitalist" class and Mr. George does not. Indeed, it seems to me that Prof. Hobhouse's zeal for democracy leads him to lengths which are really inconsistent with his own convictions. His own convictions appear to be almost those of the philosophic Anarchist. He seems to regard all restraint on the wishes of any man to do as he pleases as an evil, though a necessary evil, and to be anxious to reduce it to a minimum. But experience seems to show that real democracy is more intolerant of the freedom of the dissentient individual than any other kind of social system. You may see this, for example, in the United

States of America. You need not obey the laws there, if you can command the money required for setting the machinery which delays their operation at work, or if you have the active sympathy of the crowd on your side. But if you seriously offend the local majority you are lynched. A man who speaks his mind as freely as Prof. Hobhouse and has so individual a "mind" to speak, is just the kind of man who would find life intolerable in the kind of community to which, as a political party man, he seems to have given all his sympathies. I would suggest that Prof. Hobhouse should at least think again about a question which he appears to have decided a little hastily. He seems to assume that institutions,—except, possibly, in a democracy,—embody only the passions, not the intelligence, of their authors, while the opinions of the "rebel" express intelligence and not passion. Is this not less than just to established order and more than just to "rebels"? When a man is in violent revolt against the law of marriage, for example, how often are his "free love" opinions the result of calm and unbiassed study of human life, how often a mere disguise for his desire to get rid of his own wife or to annex some other man's? On the other side, there are surely some institutions to which Prof. Hobhouse himself is attached, not because he expects to "make" anything out of them, but because he judges them to be for the good of men. And he will not suggest that no one who happens to be more "conservative" than himself can be capable of the same kind of disinterestedness. I could also wish he would ask himself whether he is clear about his preference as between pacific Anarchy and democracy. I believe the first is his "real flame" and the second only his Euphelia. Well, the arrangement which allows a man Euphelia and Chloe at the same time is an agreeable one, but each is best kept ignorant of the other's existence. Democracy cannot avoid the coercion of the Anarchist who is so much of an "aristo" as to prefer his own judgment to that of the compact majority, and real Anarchy is essentially anti-democratic. If you are an Anarchist you *must* find the *vox Dei* not in the *vox populi*, but, so far as your affairs are concerned, in *yourself*. And finally, in view of his tendency to Anarchy, as shown in his assumption that any restraint on my liberty to do as *I* please involves evil, I wish Prof. Hobhouse had explained exactly what he means by the "equality" on which he insists as necessary to a sound social order. If I may do so without offence, I recommend him to re-read *An Enemy of the People*.

To come now to particulars. In a way, I am glad that Prof. Hobhouse should have composed a direct answer to Prof. Bosanquet's book. Every one who holds with Plato that politics is applied ethics must have felt that an exposition of the view that there are no rights against the State by a philosopher whose authority carries such weight as Prof. Bosanquet's ought to be directly answered, even if one thinks, as I incline to do, that *The Philosophical Theory of the State* is the weakest work Prof. Bosanquet has given

us. Yet, in a way, Prof. Hobhouse is hampered throughout his own reasoning by his choice of Prof. Bosanquet for his "drunken Helot". Prof. Bosanquet's second thoughts, as shown in the revised edition of his book, seem often to qualify the doctrine to the point of explaining it away, as Prof. Hobhouse himself recognises. Hence it often becomes necessary for him to distinguish between very different possible meanings which can be extracted from Prof. Bosanquet's text, and, for purposes of refutation, to adopt that which is ethically worst though logically most consistent with Prof. Bosanquet's express premisses. I suspect that in all these cases Prof. Bosanquet's bark is worse than his bite, and that his practical conclusions are not much more different from Prof. Hobhouse's own than might be expected from a difference in temperament, and Prof. Hobhouse seems to be of the same opinion. This inevitably gives a certain air of unreality to the monomachy between them. Also, I think, another consequence is that the great *practical* defect of Prof. Bosanquet's work goes unnoticed except in one incidental remark. So far as I can see, the practical mischief in Prof. Bosanquet's book is due not to Hegel but to the Charity Organisation Society. He does not really think, whatever he may say, that the State can "do no wrong," but he does seem to be quite serious in holding that the right spirit in which wrongs, whatever their origin may be, ought to be redressed is that of a Committee which takes a cold and unemotional interest in social statistics and social problems but has no sympathy with the individual as an individual, no bowels of mercies, and no capacity for white-hot generous indignation. The sufferer from a wrong seems to be regarded by Prof. Bosanquet and the C.O.S. not as a "brother for whom Christ died" but as a "case". Of course I know that in dealing with the diseases of the body politic, as in dealing with those of the natural body, it is well that the intellect of the physician should not be obscured by uncontrolled emotion. This, no doubt, is why physicians make it a rule not to treat their own nearest and dearest, but to put them under the care of a brother practitioner. And I own I suspect that a social reformer of the temperament of Mr. Hobhouse would be, in practice, in some danger of hanging the wrong man rather than no one when his indignation at some social evil is keenly aroused. But Prof. Bosanquet seems to carry detachment to an extreme. He seems to me, too often, to forget that however dispassionate we may be in our analysis of social disease, when the time to act comes, you must feel personal sympathy with your patient warmly if you are going to do him any good. Skill in diagnosis is by no means all that is wanted to make the great physician. I believe Prof. Hobhouse right in holding that the apparent emotional defects in Prof. Bosanquet's attitude are largely due to a purely false metaphysical opinion that all evil is illusory and that the worst things in the world, if we only knew more, would be seen to be "necessary to the perfection of the whole". The denial of contingency seems to me to be fatal to ethical seriousness if one is in earnest with it, as some of the Eastern philosophies

are. I am not sure whether Prof. Hobhouse means to suggest that such a denial is a necessary consequence of a genuine Theism. If he does, I believe he is mistaken, but the point need not be argued here.

In his opening lecture Prof. Hobhouse, where he is insisting on the indispensability of ethics as one of the bases of social philosophy, has some remarks which might perhaps provoke a little criticism. Social philosophy, we are told, has primarily to deal with the ideal at which we should aim, but this ideal "must grow out of reality," "it must be that which we can become," "must be sociologically possible". Prof. Hobhouse's point is that social science is the study of the "sociologically possible," and that it is thus a study of events through their causes. In the popular phraseology of the day, social philosophy deals with "values," social science with "facts," but the former implies the latter. "Even as pure theory, the philosophical view cannot afford to disregard the facts." Unfortunately, there "exists a form of social theory which repudiates in principle" this distinction between social philosophy and social science. This is the theory that the world actually is already perfect. I have already, I hope, made it clear that I fully agree with Prof. Hobhouse that sound ethical and political theory are impossible if we start with the assumption that what ought to be is just what happens to be. But I am not wholly satisfied with his conception of social science as distinct from social philosophy. You certainly cannot discover what ought to be by merely asking what is and how it has come to be. But how is it proposed to make a *separate* study of the "sociologically possible"? How do we learn what it is possible for us to become except from the knowledge of what we ought to be? We know what we ought to be, and we learn from what we ought to be what we can be. It is because we know that we ought to live the good life that we believe it possible to live it. On this point Kant's doctrine seems to me substantially right. Even to the question of "fact" *What am I?* the truest answer is that I am a being such that I *ought* to pursue certain ends, a being who ought to discover truth, to do good and to make what is beautiful. Prof. Hobhouse seems to me to leave too much of the type of theory he rejects standing when he concedes that we need to find out, by some method incomprehensible to me, what we can be before we are in a position to formulate our "ideal" for ourselves. I should rather have maintained that we start with the knowledge of what we ought to be, and that "social science" is altogether confined to the humble task of indicating means to an end which has already been prescribed for us by ethics before we begin to consider "facts" and laws of causal connexion at all. This is not to justify the "ethics of revolt". They are usually prompted by annoyance with a world in which the "rebel" cannot have everything as he would like to have it. But the only question of ethical significance is the question not *What should I like?* but *What is good?* It is only a very thoughtless Hedonism

which confuses the first of these questions with the second. I do not think Prof. Hobhouse is, in intention at any rate, a Hedonist, but I think he does at times fall into a confusion between what we wish for and what is good which creates needless difficulty in his social theory and leads him to an unduly pessimistic estimate of the actual. He sees the world very much as a "vale of tears" because he tends to argue that all of us have to go without much we desire, and to be disappointed of your desires is always evil, though it may be an unavoidable evil. But is it so certain that the mere failure to gratify your desire is evil as such? Surely the answer is "that depends on what you are desiring". If a man desires what is not good, it is better that his desire should be thwarted, or, it may be, overridden by the social order with its penalties. The evil in this case is not the thwarting of the desire but its existence. "It is not good for men to get all they wish for," as Heraclitus said. There are real evils enough in the world without adding to the number the failure of the fool to get the worthless things on which he has set his fancy. But unless we reckon the disappointment of the fool as a real evil, the world does not turn out to be so black as Prof. Hobhouse is inclined to paint it. It is no more all evil than it is all good, and, though it is right to be keenly alive to the amount of preventible evil, it is also our duty not to brood sullenly on our own hardships and disappointments, but to cultivate the habit of keeping our eyes open to the sources of happiness that are always open to us. "There's always the wind on the heath," and there is always that supreme Beauty which some of us call God and others call by other names, and from these sources of delight no one but ourselves can separate us. I do not want to say a word which could be taken for a moment as a denial that the suppression of injustice is a universal duty, but I cannot help remarking that it is not from the mouth of the real victims of "social oppression" that the doctrine of "revolt" usually comes. Envy and carnality do more than "oppression" to make the red-hot "social rebels".

I suggest that Prof. Hobhouse has allowed his justifiable opposition to any doctrine which sacrifices the well-being of individual men and women to a fancied well-being of a mythical leviathan to mislead him into an unduly egoistic conception of the end of life. Certainly the State and its institutions have no value except as ministering to the well-being of men and women, but it does not follow that to minister to a man's well-being is the same thing as to provide him with what he likes. He may like what is bad, and in that case you do not minister to his good at all by putting him in the way to get what he likes. Hence I cannot think, as Prof. Hobhouse seems to do, that there is anything necessarily evil about the restraint which life in society puts on a man's freedom to "do all he likes". This conception that freedom and law are not really compatible seems to me to vitiate some of the things which Prof. Hobhouse says in his otherwise excellent treatment of *Freedom and*

Law and The Real Will. Prof. Bosanquet would, I think, be able to make out a strong case against some of the contentions of both these chapters. Prof. Hobhouse seems to me not quite alive to the ambiguity of the words "want" and "to want". When it is said that *A* wants *x*, this may mean either (1) that *A* wishes to have *x* or (2) that it would be good for *A* to get *x*. It is only when the phrase is used in the second sense that it can be said that it is always an evil that *A* should not get the *x* he "wants". And when the words are so used, they may refer to something which *A* does *not* wish for. (*E.g.*, "what you want is a jolly good thrashing" may be neither more nor less than the truth.) Since many, if not most, of the things we "want," in the sense of lusting after them or being discontented because we can't get them, are bad, I see no reason to hold that it is *per se* an evil thing that the existence of law and order means that all of us have to go without many of these things. In fact I should think a society in which I was not hindered by force, if needs be, from gratifying some of my wishes, morally very bad indeed.

So again, I find such an assumption as that the "interest" of the "million" must be "greater" than the interest of the "one" (p. 30) highly ambiguous. If it means that it is better that a million persons should enjoy true good than that only one should, I agree. But so understood, the remark does not make in any special way for "democracy". If it is meant that it is reasonable that what a million persons wish for should be done rather than what one person wishes for, the proposition may be disputed. The "one" may be Socrates or Christ and the "million" may be sots or rogues.

It naturally follows that I find it hard to agree with Prof. Hobhouse's views about obedience. He will have nothing to do with the doctrine of winning true freedom by obedience. Obedience (p. 59) is always the choice of "the lesser evil," because it means doing what I do not wish, submitting my will to that of some one else, and this is always an evil, though not so grave an evil as the submission of a greater number of wills to mine. So we are told on page 35 that the man who subdues passion and follows principle is not really free, because obedience to principle means the inhibition of passion or impulse. Since, as Prof. Hobhouse adds, distraction between rival passions or impulses is not freedom either, it begins to look as though freedom meant something quite impossible under any social conditions from those of complete Anarchy to those of thorough-going regimentation. If it is an impossibility, it can hardly be the important thing Prof. Hobhouse assumes it to be. But surely it is plain that in aiming at what we are convinced is true good we do feel ourselves free, even though we may have to inhibit unruly motions of the soul towards what is judged not to be true good. And is it not equally plain that we only learn to choose true good, and to choose it steadily by a training in obedience to *just* law? Prof. Hobhouse seems to hold that the real meaning of freedom is following, without internal or external

let or hindrance, a *self*-chosen end, be it what it may, and the real meaning of obedience is submission to the wishes of another. No doubt, to be free at all you must be living for an end you judge to be good, but to my mind, the really important point is not simply that you judge this end to be good, but that your judgment is also a true one. And so, to my mind, obedience need not be submission to the will of another, because it is that other will; it may be submission to one's own conviction about good. Thus the ordinary good Christian will say that it is the supreme rule of life to do what God wills, but he means always to imply that God wills what is *per se* right and good. I cannot myself see that it is ever an adequate reason why a thing should be done that *I* will it; the one really satisfactory reason for doing anything is that it is good that it should be done. We shall never recover a sound Ethics until we once more make not the "self" but the good the central concept of our moral philosophy.

It is this touch of over-insistence on what the Hegelians would call "bare" or "unmediated" selfhood which makes me feel that Prof. Hobhouse's attack on the notion of a "real" will, other than the conscious choices of an individual person is hardly as successful as his criticism of the conception of the *volonté générale*. The controversy about the "real" will seems to me at least itself only half-real. Prof. Hobhouse will hear nothing of the notion of "degrees of reality": with him, of every subject you must say either that it is real or that it is not. This means, of course, that the "real" is taken as equivalent to the "actual". But though any one is free to use the word "real" in his own sense, if you do choose to identify the real with the actual, your identification makes nonsense of the writings not only of the philosophers who have spoken of an *ens realissimum* but of those of the poets who talk, for example, of "Forms more real than living man". We may say, no doubt, that Anselm or Shelley was talking mere nonsense, but at least they thought they meant something, and it might be worth while to try to find out what that something is. In the case of the controversy about the "real" will, Prof. Bosanquet would, I conceive, admit what is urged against him. He would not maintain that the "real" will of which he speaks is a series of actual conscious choices. On the other hand, however, he has himself given excellent examples by way of illustration which ought to make it clear that he means something quite definite. I remember that he speaks, for example, of the blame which we bestow on the police if a bad accident results from their failure to protect a crowd from the consequences of its own impulsive acts. When this happens, no one supposes that, as a "psychological fact" the crowd who expose themselves to injury by breaking down barriers actually frame a conscious volition which is thwarted by the ensuing accident, but this criticism only shows at most that the *name* "real will" is perhaps not the best which could be devised for our relation to what we care about supremely. It does not show that a man is unfree, in any sense in

which to be unfree is evil, because the police will not let him endanger his neck. Or, to take a different example, has Prof. Hobhouse ever read *Le Docteur Pascal*? If he has, he may remember that one of the leading ideas of Zola's story is that "love" between a man and a woman is often "camouflaged" desire for offspring, though it is only when the desired child is there, or is on the way, that the parties become alive to the fact. This is, I should have supposed, a notorious fact, though, of course, it is not the fact that the desire for the child has consciously been present all along. Yet it would be carping at words to cavil at the phrase, "what Clotilde in *Le Docteur Pascal* wanted all the time was maternity".

The real source of mischief in the Rousseau *cum* Hegel doctrine seems to me to be not the theory of the "real" will, but the confusion of this "real" will, or whatever else you like to call it, with the "general" will, and the further curious equivocation by which the "general" will—i.e., the will animating a corporate body, is identified with a will for an "universal" object. The first confusion seems to arise from forgetting that though we never will anything except *sub specie boni*, each of us actually wills "what appears to him to be good," and what appears to me to be good may often be bad. If we were all perfectly wise, and willed only what really is good, we could without leading to misunderstanding speak of the will for good as the "general will" or "will of the community". It is just because we have not all insight into the true good that there is no guarantee that the "community's will" is right. Prof. Hobhouse's criticism of this doctrine of the *volonté générale* (p. 50 ff.) appears to me admirable, except that I find it hard to follow him in what seems to me his view that "isolation" is the "core" of individuality. Surely it is by being what it is, not by not being something else, that the individual is individualised. Individuality cannot be mere negation. What Prof. Hobhouse is opposing when he maintains this negative view of individuality is, of course, Prof. Bosanquet's persistent attempt to represent individuality as something quite superficial, and individuals as capable of actual "inclusion in" an individual of a "higher" type. I am quite in accord with Prof. Hobhouse's repudiation of this doctrine, but I am not sure that his criticism of it is the true one. May it not be that the really pertinent criticism is that the theory rests on a confusion of the individual subject with that of which he is immediately aware? I do not see why the whole of what I am aware of might not also be apprehended by a second or a third subject. Even my "organic sensations" do not seem to me to be demonstrably unshareable. To put the point in popular language, I do not see that it would be impossible that my body should be "organic" to several intelligences. In that case, the "contents" of the various "experiences" would consist of the same constituents, with the difference that what was "focal" for one experient would be "marginal" for another, and that the "involuntary reactions" of one would be the "voluntary acts" of another. If this were the fact, some might

be tempted to identify the different experients, but this, I take it, would be a mistake. The "contents" of two such experiences might be identical, but the subjective attitudes of the experients to these "contents" would be different, and the two experients would therefore be two individuals, and not one. I am using my suggestion, of course, as a mere illustrative hypothesis, but there are known cases on record of pathological abnormalities which make it possible that the hypothesis may be something more than a fiction.

Is Prof. Hobhouse sure he is quite justified in saying that in a "democratic and uniform society" we "expect to find greater mildness in the use of penalties"? I mean, if we expect this, does experience show that the expectation is well founded? I am not sure that the statement does not require modification. It seems to be true that the penal code of an orderly democratic state is comparatively mild, but, on the other side, effective democracy seems to mean much the same thing as the domination of the local mob, and the local mob has a way of "penalising" disagreement with its prejudices by "lynching". In the United States it is harder to get a murderer executed after conviction by a lawful court than in most European countries, but if you give serious offence to the "boys," you are hanged, or, if your skin is black, burned alive by the local mob. The mildness of the penalties imposed by legal courts for offences against known law seems to be compensated by extension of extra-legal violence. Some of us would perhaps prefer a harsh penal code, fairly administered, to a "Terror," "Red," or "White," or to the extraordinary jurisdiction of Judge Lynch. It is after all, perhaps, only a secondary matter whether the constitution of a community is to be "democratic" or not. The great primary difference is that between societies which are ruled by known law, and societies which are ruled by caprice, whether the caprice be that of one man, of a few, or of the many. I myself should find it impossible to give any answer to the question whether "democracy" is a good thing or a bad, unless I were first told whether the democracy meant is one with a "fundamental law" or without one, and I should not suppose I am alone in my difficulty.

The chapters on *The Will of the State* and *Varying Applications* strike me as the best in Prof. Hobhouse's book. When allowance is made for the temperamental bias of which I have spoken, Prof. Hobhouse seems to me to say exactly what it is most necessary to say in reply to the deifiers of the State (*das Unthier, das Reich*, as Nietzsche calls it), and to say it so well that praise would be almost an impertinence. On the main issue, that, granted there is an embodied something whose will it is the whole of our duty to do, it is by no means clear that this something is the "State" rather than, e.g., the "Church" or the *Internationale*, he has the strongest of cases, and he does it the fullest justice. As I have indicated, I think a dispassionate court would find at any rate a verdict of "not proven" on some of the counts of the indictment against Prof.

Bosanquet, but on the charge of confusing human society, the "brotherhood of man," with the Government for the time being, I do not see that any verdict is possible but "guilty," perhaps "with extenuating circumstances". Indeed, when I remember the extreme utterances in favour of passive obedience in the *Principles of Political Obligation*, I am not sure that it is not by a little favouritism that Prof. Hobhouse contrives to acquit T. H. Green.

Still, even in these excellent chapters, there seems to me to be a fair amount of special pleading. Thus it is observed, with too much justice, that most actual law is the product not of one will guided by clear insight into good, but of many wills, co-operating and clashing, swayed by very different and often very ignoble motives. This seems to me, however, a consequence of human imperfection which affects democratic government as much as any other. The "rule of the majority" often enough means in practice a combination of certain sections of society, each primarily concerned about its own advantage, to "exploit" others. Thus it seems to me quite possible that we may see in our own country the ruthless oppression of the so-called *bourgeoisie* by a combination between a lazy and vicious "proletariat" of loafers and a small ring of financial and political "bosses," both utterly indifferent to the "good of the whole". At any rate, I do not see how democratic institutions create any obstacle to the formation of such a combination. When one thinks of the bare-faced impostures by which the last General Election was won, one may be pardoned for wondering whether the best way to arrive at a fair estimate of democracy would not be to take all that Prof. Hobhouse has said of it, and all the Dean of St. Paul's has said, and try to "strike the average". On the other hand, it seems to me that the Anarchist in Prof. Hobhouse gets the upper hand for the moment when he maintains (p. 69) that the "spirit of world-history" is a "process in which States contend and destroy one another". Do they really never do anything else? Do they never co-operate and contribute to the building up of each other? The utterance reminds one of Shelley in his most pessimistic mood, but I can hardly believe that Prof. Hobhouse looks on history, as Shelley did by his own avowal, as a mere "disgusting" record of crime and folly.

Prof. Hobhouse returns to his point on p. 81 when he says, with obvious intention to extol the judgment of the individual "rebel," "when I will a thing, I clearly see what I mean to do". If this means that Prof. Hobhouse never takes a resolution without seeing clearly what, on a sane estimate of probabilities, will come of it, seeing "what he means to do" in all its bearings, he is a wiser man than most of us, and I would cheerfully exchange the best of democracies for the rule of the philosopher with Prof. Hobhouse as philosopher-king. But if Governments usually do not see very clearly what they are doing, "rebels" seem to me to be in much the same case. Did the promoters of the recent strike in the Yorkshire coal-mines see very clearly what they "meant to do"?

Or the "democratic" Cabinet which passed the Trades Disputes Act, and by doing so made the "strike against the community" possible? On the other hand, very few Governments known to history can ever have been so short-sightedly selfish as it is assumed at pp. 82-83 all Governments are. "The complete *adikia*" described there might perhaps be nearly realised under a ruthless "proletarian dictatorship" or a thorough-going control of affairs by a group of Trust "magnates," but it goes far beyond anything that has ever been seen in our country, except perhaps in one or two periods of anarchy when there has been for the time no effective Government at all. It is to be hoped that such utter class-selfishness is a mere fiction, but if it is possible, surely it is just as likely to arise in the classes which are inevitably specially favoured by "democracy" as in any others. Arguing against the identification of the enactments of a governing class with the "general" will, Prof. Hobhouse pertinently reminds us that "it was not by the will of the peasantry that their fields were enclosed". True, but it was equally not by the will of the great mass of the people that 6s. a ton was recently added to the price of coal, nor will it be by the will of the *bourgeoisie* if they are loaded with taxation to provide one advantage after another for the industrials of the well-organised Trades Unions. But "democratic" institutions are quite powerless to prevent this form of injustice.

The carefully considered discussion of "conscientious objection" to the law on p. 90 ff. seems to me one of the best pieces of work in the book, but I think some injustice is done to the Government in the rhetorical attack on them in the note on p. 94 about the hardships suffered by certain objectors to military service. That there were cases of genuine hardship is undeniable. But they were caused, as I should say, in the main by a well-meant error on the part of Government. The rational course would have been to allow no exemptions on the ground of "conscientious objection," and to impose a uniform penalty. The conscientious objector would then, no doubt, have had to suffer for his objection, but in the world as it is, this seems to be the inevitable price for being before—or behind—your age in your "convictions". I, at least, should not think I had any right to complain if I were penalised for my conviction that it is wrong to do what my countrymen as a body think it a man's duty to do. The Government, meaning to be kind to the really conscientious objector, allowed such objections as a valid ground for exemption. This, of course, produced, as might have been foreseen, a crop of hypocrites who pleaded "conscience" as a mere excuse for shirking onerous and dangerous service, and the consequence was that the cruel task of finding out who were the real "conscientious" objectors, and who were the hypocrites, was inevitably thrown on local tribunals. That there was no uniformity of standard between the different tribunals—the chief grievance of which Prof. Hobhouse speaks—was again inevitable. The variations of standard really give no ground for attacking the integrity of the members of

the tribunals, or denouncing them as persecutors. I cannot help thinking that Prof. Hobhouse would be kinder and juster in discussing the blunders of bodies composed of "working-men".

I am a little surprised again to find Prof. Hobhouse, on p. 110, expressing unreserved approval of a well-known passage in the *Biglow Papers* which, if it means anything, means that every private soldier employed in a war which has been unjustly resolved on, is a murderer. This seems really absurd, particularly in the case of a war in which the combatants are not volunteers but conscripts. It is only reasonable that the ordinary private man, whose opportunities of knowing and judging soberly of the facts of the situation which has led to a war are so limited, should be held clear of the responsibility for the goodness of the cause. Of course, a man may have information which would make it his duty to refuse to serve, but it is nonsense to suggest that there were many men in this country during the late war who could have had special knowledge of this kind. To do the "conscientious objectors" justice, most of them did not make it their plea that *this* war in particular was unjust. Their objection was to war as such. And on the general question, one may fairly ask both Lowell and Prof. Hobhouse, neither of whom professes to regard war as always wrong *in se*, is the executioner who hangs a man convicted on the evidence by a legally constituted court a murderer, if it turns out afterwards that the man was *de facto* innocent? Is the turnkey who keeps a prisoner in custody a criminal if it is discovered that the man's conviction was a mistake? Is a hangman to refuse to do his office or a turnkey to release his prisoners unless he has first formed a personal opinion on the merits of the case? We usually hold that that is the business of the judge and jury, and that it would be intolerable presumption on the part of the executive officers to usurp the judicial function. Why is this principle to be rejected in the case of the soldier? I can only presume that Lowell was assuming that, in the special case of the Mexican war, every one who volunteered already *knew* that there was no justification for hostilities. I cannot suppose he meant anything so absurd as that the professional private soldier is always personally responsible for the decisions of the Government which employs him. One must remember that Lowell's lines are not addressed to professional troops; they are meant to deter civilians from volunteering for what Lowell held to be an iniquitous filibustering campaign. I am also not sure whether in some of the remarks which Prof. Hobhouse goes on to make about the distinction currently made between what a man may do as an agent of the State, and what he may do as a private gentleman, he keeps in mind the point that it is not quite clear that, when I act as a trustee for others, it is permissible for me to be as accommodating as I might if I were acting only for myself. For example, it is praiseworthy, in one's own concerns, not to insist on the letter of one's legal rights, but I doubt whether a trustee is not morally bound to insist on the full legal

rights of those whom he represents. This does seem to me to set certain bounds to the legitimacy of a policy of "graceful concessions". Of course, I do not mean for a moment to deny that no such considerations can be urged in defence of a great deal which "statesmen" have been accustomed to permit themselves to do on the plea of "reasons of state". I merely wish to suggest that in discussing these problems something of the dispassionate candour of Henry Sidgwick is as necessary as zeal for righteousness. I should not like to say myself, without qualification, that it is always wrong for an agent of the State to do what he would not do for himself in a private affair. I should prefer to say that he must not do the sort of thing an honourable man would judge it wrong to do as a trustee for a client.

As might be expected, Prof. Hobhouse hopes a great deal from a "League of Nations". I wish he had faced the difficulty which makes some of us rather less sanguine. Have we really very solid ground to hope that the judgments of such a League will always be given only after impartial scrutiny of facts, and will represent the honest convictions of the parties? If we have not, the findings of such a body will after all at best embody not what Rousseau calls the *volonté générale*, but only the *volonté de tous*. I doubt very much, for example, whether a League of any kind would have given a really just verdict on the issue between ourselves and President Kruger. Some of its members would have taken the side of Kruger merely from envy of the United Kingdom, others from a sentimental feeling for small countries as such, others to oblige powerful neighbours, while yet others would probably have supported our own contentions because it was to their own interest not to disoblige the United Kingdom. I gravely doubt whether a single vote would have been determined simply and solely by honest convictions about the rights and wrongs of the quarrel.

A. E. TAYLOR.

VI.—NEW BOOKS.

Essays in Common-Sense Philosophy. By C. E. M. JOAD. London: Headley Bros., 1919. Pp. 252. 8s. 6d.

THERE are many philosophies; and in all of them there is an early stage at which certain propositions are simply asserted, their justification being sought at a later stage. In the later stage, however, these propositions tend to be modified. Thus, if we want to know what a philosopher really holds, we have to wait until he has developed. At the present time this is most often seen among realists. It is especially seen in this little book. Mr. Joad is a realist who wants to hold to common sense. He will not allow himself to be compelled by mere logic to depart from what he considers to be common sense. And thus (since Mr. Joad has not yet developed) we have a twofold appearance of dogmatism: Firstly in the basic propositions he holds as a realist, and secondly in the refusal in the name of common sense to follow these propositions to their logical conclusions. As a consequence there is hardly a single problem on which Mr. Joad does not hold contradictory views. This is, of course, no discredit; it simply means that the book is not final. Mr. Joad is seeking a position; and this book represents the first stage in his search. Contradictions in so far as they are due to his attempt to serve two masters, are in place here. They are a sign of vitality. But they must be faced: they are there to be got rid of.

There are seven essays; the first five deal with the philosophical basis of Mr. Joad's views, and the last two apply these views to Political Theory and to the relation of Thought and Temperament.

The Introduction is hopeful. If the fact that Reality is not an organic whole empties philosophy of much of what hitherto appeared significant, yet there are certain truths that remain. And this book is an attempt to state some of them, and to convince readers of their truth. Yet in the last chapter, Mr. Joad recognises the irrationality of the task. For there is no such thing as an act of pure intellectual apprehension. Every act involves both thought and temperament. Though the convictions we base on our selections of fact are intellectual,¹ yet our selections of fact are conditioned by temperament. This is especially the case in philosophy. Hence however rational we may attempt to be in philosophy, our philosophies will in the end be as our temperament. "Once grant that our selection of truth is not free, but that our choice is conditioned

¹ An important proposition if true, which however makes it difficult to see how our convictions can be anything but true, relative to our selections. And if Mr. Joad is correct in his account of judgment as based on perception, and if perception is as he thinks infallible, while judgment may err, it is difficult to avoid the further position that a set of entities selected from a whole can form an entity having relations between its parts which do not correspond to anything existing in the original whole. But this is surely too Monistic for Mr. Joad.

in part by temperament, and the irrationality of endeavouring to make others see truth as we see it becomes overwhelmingly clear" (p. 252). But in spite of this, Mr. Joad essays the task. And he so far forgets its irrationality as constantly to find it "curious" that people should accept certain doctrines he himself does not hold.

But while in philosophy (and in religion) temperament plays an overwhelming part, there are some kinds of knowledge exempt "mainly, if not wholly, from the influence of temperament": viz., mathematical and scientific truths, and some truths regarding goodness and beauty. We all agree (Mr. Joad thinks) that $2 + 2 = 4$, that sunsets are beautiful, that lying is wrong.

Mr. Joad thinks that our agreement on these propositions indicates that they fall within spheres within which mental activity is exempt from temperamental influence. There must, he argues in the chapter on "The Objectivity of our Concept of Beauty," be something objective in them which we are compelled to appreciate, so that temperament operates not so much in the selection of facts we make, as in the degree to which we appreciate this objective something. There is in short an *εἶδος* of Truth, Beauty, and Goodness.

Thus it seems that Mr. Joad holds that if there is something objective in beautiful things, we shall all be compelled to appreciate it independently of temperament: and again, that if there is something we are all compelled to appreciate, there must be something objective.

His fundamental axiom amounts to this, that whatever can truly be predicated of an entity belongs to the entity independently of minds. How then does he discover what can be truly predicated? He actually uses various tests (a) by simple assertion; (b) by appeal to unanimity (e.g., pp. 122-123); (c) by confirmatory appeal to common sense, where there is not unanimity (p. 122); (d) by appeal to the facts of what we really think, in spite of whatever we may happen to think we think (p. 123).

(d) reduces to (a); (c) is cut out by the argument *re meringues* (p. 123). Thus we are left with (a) and (b). (b) is indeed argued against on pages 93-94, where it is suggested that opinion regarding beauty is chaotic; and he seems on page 123 to admit the possibility that there may be people who regard sunsets as not beautiful.

That Mr. Joad's arguments for the *εἶδος* of Beauty really reduce to simple assertion will be apparent to the attentive reader of his book; and we may note as symptomatic the arguments on pages 118 and 120. The argument on page 120 is brief, and we can give it in detail. He asks supporters of the subjective view of beauty, and also of the view that beauty is a relation between mind and object, to consider the following position. (I make the argument consecutive.) Suppose beauty involves an admirer. Then when all cease to admire, the beauty is gone, though the object is unchanged. *But its beauty belongs to it.* Hence it can't go if the object is unchanged. Hence beauty does not involve an admirer. Hence beauty must belong to the object.

The argument on page 118 involves a similar *petitio principii*.

We are left then with the assertion that there is an *εἶδος* of Beauty: together with the vague feeling that it ought to compel us all to appreciate its presence: but with the realisation that it does not always do so. For if he is willing to assume that everyone regards the Sistine Madonna as beautiful (or ought to) he is not so willing in the case of Wagner or the Merry Widow Waltz.

And in the chapter on "The Meaning of Truth" Mr. Joad is forced to the candid conclusion that there is no criterion of the truth of judgments

of beauty and goodness (p. 95). But if so, does not the whole of his argument in favour of *εἶδη* of Beauty and Goodness fall for lack of support?

There is just a suggestion of a principle contained in the argument (p. 155) against Prof. Alexander, which might be worth following out. Mr. Joad remarks that since there are people who regard a shilling as beautiful, the reasoning which makes its roundness and whiteness to be not mental should be extended to its beauty.

The principle at the basis of this remark might be taken to be: If it is possible to regard A as B, then B belongs to A independently of all thought. And this is perhaps the safest and most satisfactory principle for a realist to adopt. Mr. Joad should try it in connexion with his view of temperament.

Space forbids us to discuss in detail the chapter on "Universals as the Basis of Realism". We note only that the fact that truths depend on minds so that if there were no minds there would be no truth (which Mr. Joad holds) is not held to militate against an *εἶδος* of Truth (pp. 80, 81), though the fact there is an *εἶδος* of Beauty is held to militate against a parallel argument in the case of Beauty. The whole chapter appears to show vacillation on the question of the reality of time. Mr. Joad believes time to be real; he sees that Plato was led to his *εἶδη* largely because of his belief in the unreality of time; but many of his own arguments for *εἶδη* lose their force if time is real. Indeed the doctrine of the reality of time taken seriously seems to cut out all need for the independent being of universals. Mr. Joad is perhaps unnecessarily "tender minded" on this point.

I have tried to bring out the characteristic quality of this book; and I might equally well have taken other cases. Mr. Joad's coat is of many colours, and his book is very gay. We do not regard it as final. He has dealt the cards; he has now to play the game. That he will play it vigorously, the book itself promises. The chapter on "The Theory of the State" shows Mr. Joad at his best. There is no index. Mr. Joad might begin by making a full index, collating all the passages dealing with judgment, error, *εἶδος*, unreal, being, existence, universal, etc., as an aid to discovering where he himself stands.

LEONARD J. RUSSELL.

National and International Right and Wrong. By HENRY SIDGWICK.
London: George Allen & Unwin. Pp. 77.

This republication of two essays from Sidgwick's little work on *Practical Ethics* is very opportune at a moment when the possibilities of a League of Nations and the danger of international "class warfare" are so much before the minds of all thoughtful men. It is not clear why such good wine should be supposed to need any bush, but if every book and booklet must have an encomiastic preface, Lord Bryce's has the merit of saying what has to be said with the dignity and restraint appropriate to the memory of Henry Sidgwick. The two little essays deserve to be carefully read and pondered by all intelligent students of contemporary social tendencies who have not read them before. They are, like everything Sidgwick wrote, the more impressive from their utter freedom from rhetoric and the caution and moderation with which their conclusions are expressed.

After the experiences of the last five years, the issue discussed in the essay on *Public Morality* may be fairly regarded as *chose jugée*. Neo-Machiavellianism has now been judged by its fruits and found wanting in everything which can recommend it to decent men. The immediate

future will probably supply an impressive commentary on the most incisive sentence of Sidgwick's examination of the claim of that particular corporation called the "State" to set itself above the laws of common morality. "If everything is permitted in national struggles for the sake of the nation, it will be easy to think that everything is permitted in party-struggles or class-struggles for the sake of the party or the class." This is exactly what both our professional politicians and our Marxians do think, and we are learning something now and shall have learned a great deal more by the end of next winter of the practical results to which such thinking leads. If exception can be taken to any of Sidgwick's statements, I should venture to think that the remarks on pages 36-37 are less than just to that much-maligned man of genius Hobbes. It is true that Hobbes, as Sidgwick says, held that persons "in a state of nature" are free to do whatever they judge to be for their own self-preservation. But it should be remembered that Hobbes also held equally strongly that it is a duty to put an end to this state as quickly and completely as possible. "To seek peace and ensue it" is, on his principles, the interest and duty of communities as well as of private persons. The point may be a little obscured by his terminology, but there is no reason for doubting the sincerity of his express assertion that though a ruler cannot commit injustice, he can be guilty of "iniquity," violation of the moral law which is also the law of the King of Kings. I think also that the analysis is not carried far enough in the passage where Sidgwick is discussing the limits within which current morality itself allows "States" and their officials a greater latitude of departure from rigid veracity than it permits to private persons. It is true that we commonly regard it as dutiful in a general or a detective to deceive the enemy or the criminal about matters of fact, but I doubt very much whether accepted morality would condone the conduct of a statesman or general if, "for reasons of state," he fabricated documents intended to represent the victims of an aggressive policy as the real aggressors, or circulated stories known by him to be false about cruelties and "atrocities" perpetrated by the enemy's orders. There was general indignation over the clumsy attempts of the Germans to make it appear that the Belgians had been plotting to violate their own neutrality, and the philo-Teuton minority among ourselves were probably sincerely indignant about what they described as the "manufactured" stories of German "atrocities". It is, I believe, usually held, though in a confused way, that the "medicinal lie" must not involve false aspersions on the honour and character of an opponent. So again I doubt whether public opinion among ourselves would tolerate *certain* false representations by a magistrate or a policeman. What would be said of a detective who extorted a confession from an offender by a false representation that an accomplice had offered to turn King's evidence? I believe it would be widely felt that such conduct "isn't cricket". It would be worth while to ask whether this feeling does not embody a sound principle.

The second essay, the *Morality of Strife*, hardly calls for any remarks. It is an unusually judicial and thoughtful examination of the limits within which it is reasonable to expect strife between nations or classes to be avoidable by habitual recourse to arbitration. Of course we all hope now, as we formerly hoped in vain when the Hague tribunal was instituted, that a League of Nations will do much to bring about so desirable a result. But unless we clearly recognise that there are limitations to the peace-promoting powers of any such organisation, we are in danger of bitter disappointment with real and valuable results because we have been hoping for impossibilities. There never was a time when men needed more than at the present to be reminded, as Sidgwick reminds us,

that organisations to diminish strife will accomplish little of themselves unless we make systematic effort to educate individuals into an improved sense of justice, a habit of trying to see every case from the point of view of the other party. I commend to warm-hearted but hasty Pacificists two observations in particular, that the mere intensification of "altruistic sentiment," unaccompanied by education in justice, would be quite likely to increase rather than to diminish strife, and the other observation that in nearly all conflicts between nations or classes each party is quite honestly convinced of the "justice" of its cause. Sidgwick seems to me quite right in holding that passionate zeal for a cause which is not *believed* to be a just one is a very rare thing indeed in modern life. What we really need is not rhetorical denunciation of the "horrors" of war; to some of the best minds such denunciations will often seem to be mere exhortations to sacrifice justice to "comfort". We need, above everything else, clear ideas about the limits of our "just rights". The machinery of a "League of Nations" may be very valuable as providing opportunity for enlightening ourselves on the point by learning how our case looks to the "impartial spectator". The difficulty, of course, is to be sure that even such a league will always reflect the views of an "impartial spectator". Its decisions *may* be only too often the unpredictable outcome of the "sectional" interests of its members, like the decisions of a Parliament broken up into small and intensely self-interested parties.

I should like to utter a mild protest against the passage in which Plato and Aristotle are made responsible for the view that war is the one serious business of a State and the professional military men the only class whose education need be an object of general concern. After all, it is Plato who says that the great mistake of existing States is to suppose that war is earnest and peace is play, and Aristotle who tells us that we only go to war to secure peace. I am afraid Prof. Sidgwick had forgotten that Plato wrote the *Laws*.

A. E. T.

Social Purpose. By H. T. W. HETHERINGTON and J. H. MUIRHEAD.
George Allen & Unwin.

It is not surprising that at this time when the State, as an institution, may be said to be upon its trial, 'the most marked effect of the great war upon social theory' being, as Prof. Muirhead says in the book now before us (p. 50), 'the profound distrust of the State as merely the organ of a wider and more deeply rooted form of selfishness,' that thinkers who have been accustomed to regard it with feelings of a quite opposite kind, should deem themselves called upon to give an account of the faith which is in them. Prof. Watson has done this by rehearsing in the presence of existing facts the principles of Green's political philosophy in his *State in Peace and War*, Sir Henry Jones by the inspiring profession of his confidence in the power of duty strenuously followed to lead us into all political truth which he has given us in his *Principles of Citizenship*, and lastly Professors Muirhead and Hetherington in a work of larger scope than either of these, which deserves a warm welcome from all students of the subject with which it deals.

'The real problem of civic theory is,' says Prof. Muirhead (p. 38), 'not the *de facto* existence of the civic order, but the foundation of its claim to the loyalty of individual citizens.' This problem is, as he points out later on (p. 91), one with that of the relation of 'the claim of the State' to 'the claim of conscience speaking in the name of an absolute human

perfection'. There is no question as to the side which would be taken by our authors in a conflict between the two. Prof. Hetherington lays it down quite clearly (p. 228) that the State 'can never claim'—rightly claim, that is—that the individual owes his final loyalty to it, or that in its service he should be prepared to sacrifice without question the duties that he owes to other institutions'. It is 'neither the whole of Society nor necessarily the institution which is always most representative of it'. Society itself is conceived in this book, on the lines laid down long ago by Plato, as the expression on a larger scale of the spiritual nature which is manifested in each individual citizen.¹ It is clearly seen that this conception is incompatible with seeking in economic interests solely or chiefly the bonds which may unite nations in a 'Commonwealth of Man' (p. 94, cp. p. 192). 'Man and mammon,' Prof. Muirhead goes so far as to say, 'are as opposed in politics as God and mammon in religion, and the condition of the addition of all other things to the State is that it should seek first the kingdom of Man' (p. 96). The salutary influence of Greek philosophy, with its comprehensive notion of the nature of the human soul, is seen also in the valuable observation on page 53 that 'the doctrine of the unity of instinct, of which perhaps M. Bergson is the most distinguished exponent at the present time, has been part of a general movement of reaction against the view which found the source of organisation in conscious intelligence dealing with passions wholly irrational in themselves. But the lesson, which the discovery or rediscovery of unity of plans and purpose in the instinctive elements of human nature has to teach, is misread if it be interpreted, as it is by many Bergsonians, to mean a denial of the rights of thought and reason as the unifying and organising principle of human life.'

Nevertheless, although 'the foundation of the claim of the civic order to the loyalty of individual citizens' is proclaimed, as we have seen, to be 'the real problem of civic theory,' it is perhaps in respect of the meaning of *authority* in the community that one is most disposed to ask our authors for more light than they have given us. This subject is not, as such, discussed in Part I., and although in Part II. the problem, intimately connected therewith, of the relation between Church and State is treated in a very frank and interesting manner, it is not as thoroughly thrashed out as might be wished. It is stated on page 110 that these lectures are founded on the doctrine of the General Will. I venture to doubt whether a satisfactory account of the nature of political obligation can be derived from that doctrine alone. I suspect that to obtain such a satisfactory account it may be necessary not only to return (if we may so speak) from Green to Kant, by making the consciousness of obligation rather than the consciousness of a common good primary in ethics, but also to recognise, after the manner of Martineau, more emphatically than does Kant himself, the revelation in the categorical imperative of duty of a divine lawgiver, and to admit along with *autonomy* an element of what has been called *theonomy* as an essential factor therein.

The book under review abounds in good remarks, such as those on page 110 about 'the cant of personality, against which it is well to be put on our guard,' and the risk on the other hand, of making a grave misfortune take 'if we think we shall fare better by going to the other extreme, and the cant of personality substitute the cant of citizenship': the admirable

¹ Why, by the way, is Plato's doctrine described on page 38, in words taken from an address of Mr. Bosanquet's, as 'a great comparison of the relations between human beings in society to that between the parts of a living *body*' and not rather 'of a living *soul*'?

observations on the married life (pp. 144, 145),¹ on the effect of the distinctively national traditions of Scotland, Ireland and Wales, upon their contribution to leadership in the British Empire (p. 169), and on that of the existence of 'residential suburbs' upon the growth of a civic consciousness (p. 171); or again the observation on page 76 that 'man imitates because he is social; he is not social because he imitates'.

This short notice is far from doing justice to a very valuable contribution to social and political philosophy, but it will have served its purpose if it persuades any one to read it who would not otherwise have done so.

It may perhaps be worth while calling attention to a misprint of 'wedded' for 'welded' on page 124.

C. C. J. W.

The Principles of Christian Apologetics (Westminster Library for Catholic Priests and Students). By the Rev. T. J. WALSH. London: Longmans, Green & Co., 1919. Pp. xv, 252.

A useful little work propounding most of the current objections to Christianity, as taught by the Roman Church, with replies to them. The book should be instructive to everyone who wishes to understand the general attitude of the Roman Church to popular controversies. The one criticism I feel moved to make is that Mr. Walshe is throughout "preaching to the converted". He offers those who already hold the faith of his Church answers,—often quite good ones, so far as I can judge,—to criticisms which may be levelled at them by outsiders, but I can hardly suppose his treatise would bring much conviction to the unconvinced, since the premisses from which he reasons would in many cases not be admitted by the doubter. For example, he raises the question whether the appeal to "prophecy" is legitimate, seeing that it may be urged that the Evangelists themselves misunderstood the prophecies they cite. His answer is that the Church, in the exercise of its *magisterium*, has determined that it is inadmissible to attribute such error to the New Testament writers. But anyone who seriously believes, *e.g.*, that the Evangelists were mistaken in seeing a prophecy of the Resurrection in Our Lord's allusions to the story of Jonah would probably retort that the *magisterium* of the Church is even more in need of defence than the inerrancy of the Evangelists. As Mr. Walshe, no doubt, sees this, I cannot suppose he intends the argument to convince the outsider. If allowance is made for this peculiarity, much that is at any rate suggestive will be found in the little book.

A. E. T.

Métaphysique et Psychologie. By THEODORE FLOURNOY. Second Edition, with a Preface by HARALD HÖFFDING. Geneva, Kundig, and Paris, Fischbacher, 1919. Pp. xvi, 195.

This volume is a re-issue of a work published by the veteran psychologist of Geneva so long ago as 1890, but, as Prof. Höffding's Preface to the new edition explains, he has unfortunately been prevented by grievous illness from revising and expanding it. Under these circumstances the interest of the book, apart from its abiding literary charm, is largely historical; but as such it is considerable. For it shows very clearly how definitely Prof. Flournoy had anticipated both the subsequent criticism of the

¹ In the discussion (pp. 158, 159) of the 'sacramental' character of marriage, it is not clear that the writer has borne in mind the fact that, according to the regular doctrine of the Church, the parties themselves and not the priest are the 'ministers of the sacrament' in this case.

principle of psychological parallelism and the discovery of the Pragmatic Method. The whole book is in the first place a sustained and brilliant argument against taking the principle of parallelism as the metaphysical solution of the problem of mind and body. He insists instead that it should be taken methodologically, as merely a postulate of mechanical experiment. Now to take an idea methodologically is to take it for what it is worth, as an instrument of research, without stopping to debate its metaphysical reality (pp. 59-60); and this of course is the way to treat *all* ideas according to the pragmatists. Accordingly Prof. Flournoy *had* to arrive at a pragmatic treatment of the principles he considers. He had to conceive them as "rules of conduct" for the researcher, as "threads of Ariadne" for traversing the labyrinth of facts, and to declare that "their practical utility takes the place of a rigorous demonstration". For whatever the logician may object from his syllogistic high horse, the researcher who has seen them at work "respects them as necessary instruments of every advance of positive knowledge" (p. 17). Principles like the law of inertia or the conservation of energy arrive at their axiomatic dignity, and "acquire the value of a principle" (p. 19), gradually and "quite prosaically by their success. Simple guesses to start with, they win the confidence of scientists by the clearness with which they illumine the chaos of phenomena, by the simplicity which they introduce into the co-ordination of the facts. Thus they rise to the rank of truths which all experiences tend to confirm, and subsequently are not slow to rise still higher and to assume an authority superior to ordinary inductive laws, and one may say, to the facts themselves. For there comes a time after which no observed facts, whatever they are, are able to refute them" (p. 18). This surely is precisely the doctrine of the evolution of postulates into axioms under pressure of experience, expressed with such felicity that I should assuredly have fortified myself with Prof. Flournoy's authority had I been acquainted with *Psychologie et Métaphysique* before writing *Axioms as Postulates*. Similarly on page 60 we find an anticipation of Vaihinger's *Als Ob*, and on page 89 of James's *Will to Believe*. Here too we find the explanation of Prof. Flournoy's discoveries. He had never allowed himself to forget that the "man of science is nevertheless a man," and that "where science, that is the intellect, is silent, his other faculties may speak and even command" (p. 89). Accordingly he can avoid the shallowness of "intellectualist philosophies" which restrict "the principle of conviction to an alleged necessity of the understanding" and fail to see that it is "not the requirements of our *cognitive* faculties which drive us to pronounce judgment on the essence of things" (p. 112).

Ultimately, of course, Prof. Flournoy's insight rests upon his personality. It was because of his richly humane and sympathetic nature that he was a friend of James, that he thought like James, and that he anticipated James. That is the amount of truth in the doctrine that a man's philosophy is relative to his personal character. But the case of Prof. Flournoy is at the same time a signal refutation of the nationalistic contention that philosophic beliefs are merely a function of racial or social factors. No doubt every community has, and usually suffers from, its academic tradition—which is often highly antagonistic to the tastes and beliefs of the masses—but there was nothing innate in the quality of Anglo-Saxon mentality to necessitate the development of pragmatism. If a Greek, or a Chinaman, or even a Hindu, had had the genius, he could have anticipated it just as easily and as completely as James, or Dewey, or the distinguished representative of French Switzerland to whose brilliant work this is a tardy tribute.

F. C. S. SCHILLER.

Received also :—

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- Bernard Muscio, *Lectures on Industrial Psychology*, London, Routledge & Sons; New York, Dutton & Co., 1920, pp. iv, 300.
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- Henry H. Goddard, *Psychology of the Normal and Subnormal*, London, Kegan Paul, Trench, Trubner & Co., 1919, pp. xvii, 349.
- Prof. Sigmund Freud, *Totem and Taboo*, translated by A. A. Brill, London, Routledge & Sons, 1919, pp. xii, 268.
- Paul Oltramare, *Vivre*, Genève, Georg & Co., 1919, pp. xvi, 326.
- Neery, *A Fragment of the Human Mind*, Edinburgh and London, Blackwood & Sons, 1919, pp. xv, 309.
- A. T. Schofield, *The Mind of a Woman*, London, Methuen & Co., pp. vii, 120.
- Emile Boirac, *The Psychology of the Future*, translated by W. de Kerlor, London, Kegan Paul, Trench, Trubner & Co., pp. ix, 322.
- F. W. H. Myers, *Human Personality and its Survival of Bodily Death*, edited and abridged by S. B. and L. H. M., London, Longmans, Green & Co., 1919, pp. xiii, 307.

VII.—PHILOSOPHICAL PERIODICALS.

PSYCHOLOGICAL REVIEW. Vol. xxvi., No. 2. **R. M. Yerkes.** 'Report of the Psychological Committee of the National Research Council.' [Deals in general with the work of the 17 sub-committees, and especially with the psychological examination of recruits, problems of aviation, selection of men with special aptitudes, problems of vision, training and discipline.] **C. E. Ferree and G. Rand.** 'Chromatic Thresholds of Sensation from Centre to Periphery of the Retina and their Bearing on Colour Theory, ii.' [The colour-tone of R and G is very little, that of Y and B is largely if not entirely dependent upon achromatic conditions; there are no invariable colours; there is no constant ratio of sensitivity to the pairs R-G, B-Y. The current logic of the Hering theory is badly at fault. Constancy of cancelling proportions with irregular distribution of sensitivity offers a real problem, which may perhaps be met by the assumption of more than one functional level or *locus*.] Vol. xxvi., No. 3. **J. B. Watson.** 'A Schematic Outline of the Emotions.' [An emotion is an hereditary pattern-reaction involving profound changes of the bodily mechanism as a whole, but particularly of the visceral and glandular systems. The original emotions are fear, rage and love. The paper discusses the methods available for the study of emotion; emotional transfers; emotional outlets; consolidation of emotion, habit, instinct; the results of physiological investigation; and the rôle of emotion in daily life.] **H. C. Warren.** 'A Classification of Reflexes, Instincts, and Emotional Phenomena.' [Tentative tables of human reflexes, instincts, instinctive tendencies, emotions and dispositions.] **H. N. Gardiner.** 'Affective Psychology in Ancient Writers after Aristotle.' [The interest is practical; the results are conditioned upon ethics and metaphysics; the formal or logical side is overstressed. In spite of these defects we see the beginnings of a science: in the biological outlook, in the emphasis laid upon bodily commotion, in the realisation of the complexity of affective problems.] **H. N. Wieman.** 'The Nature of Mentality.' [Mentality is the process whereby stimulated organic tendencies are adjusted to the performance of a series of movements resulting in adaptation to environment. If the organisation is complete, we speak of instrumental mentality; if it continues indefinitely, of creative mentality.] Vol. xxvi., No. 4. **H. H. Bawden.** 'The Evolution of Behaviour.' [The evolutionary process culminates in the hegemony of the accessory muscles, particularly those of speech. The liberation of the larynx means the building up of a world of incipient responses or symbolisations. The whole movement is aimed at contact-values; sight, hearing, smell are for the sake of touch, manipulation, enjoyment. All social institutions are thus interpretable.] **R. T. Wiltbank.** 'The Principles of Serial and Complete Response as Applied to Learning.' [Critique of Peterson. The principle of serial response needs, however, two qualifications: a second stimulus may come into play while the first is still operative; and, since successful movements must be made through the full length of the runway, and there is a constant tendency to shorten erroneous movements, the arcs involved

in the former will be more highly innervated.] **H. Carr** and **H. Koch**. 'The Influence of Extraneous Controls in the Learning Process.' [Preliminary experiments upon rats with free and controlled learning of alternate paths led to inconclusive results; control, even with the animal's motor impulse added, does not necessarily constitute a very favourable condition of learning. Further investigation is in progress.] **E. R. Wembridge** and **P. Gabel**. 'Multiple Choice Experiment Applied to School Children.' [A test-series of 15 choices (cards) applied to 100 children from 7 to 11 years of age gives a coefficient of correlation $r = 0.48$ with mental age according to the Stanford revision of the Binet scale.] **B. Johnson**. 'Practice Effects in a Target Test: A Comparative Study of Groups Varying in Intelligence.' [Tests of three groups from a Women's State Reformatory (mental ages 15, 11, 8). The upper-grade defective shows marked capacity of improvement. Learning curves of the extreme groups show fluctuations and valleys rather than plateaus, and thus point to a differentiation of incentives; the median group has the usual form of curve. Individual curves are suggestive of temperamental types.] **H. A. Toops**. 'Plotting Equations of three Variables in Mental Measurements.' [Illustrates the use of a series of curves, common and representative series-values of a variable, to represent the variations of a dependent third variable of a mathematical equation.]

AMERICAN JOURNAL OF PSYCHOLOGY. Vol. xxx., No. 1. **J. M. Gleason**. 'An Experimental Study of "Feelings of Relations".' [Extended experiments on 9 observers with appropriate graphic and verbal stimuli reveal neither a relational element nor a constant relational pattern of processes.] **H. Gale**. 'The Psychology of "Native Sons".' [The American who grows up and continues to live in his birth-place is doomed to a life of trivial memories, due to his boyhood's companions and environment, unless he can raise an intellectual superstructure by travel and persistent education.] **C. E. Ferree** and **G. Rand**. 'The Speed of Adjustment of the Eye for Clear Seeing at Different Distances: A Study of Ocular Functions with Special Reference to Aviation.' [Description of apparatus. There are very considerable individual differences well below the limit (apparently about 30 years) at which the influence of age becomes effective.] **E. B. Titchener**. 'An Anomalous Case of Simple Reaction.' [Analysis of a case in which instructions for sensory and motor reactions were interpreted as instructions for cognitive and sensory.] **T. Schroeder**. 'Authorship of the Book of Mormon.' [Sharp critique of Prince's theory of Smith's authorship. The book was probably written by Spaulding, and revised by Rigdon.] **R. Michaud**. 'Emerson's Transcendentalism.' [Reply to Girard. Both religiously and philosophically, and in the latter regard both metaphysically and epistemologically, Emerson represents the culmination of New England transcendentalism.] **E. S. Conklin**. 'Superstitious Belief and Practice among College Students.' [There is ample evidence, not only that the great majority of students (men 73, women 90 per cent.) entertain or have entertained superstitious beliefs, but also that the tendency is persistent, so that new superstitions are readily created.] **J. E. Downey**. 'The Psychology of Figures of Speech.' [Experiments with poetic passages. The conscious background may be sensuous (imaginal), emotional or intellectualistic; the process of appreciation is highly variable, showing coalescence, displacement, condensation, empathy, etc.] Book Notes. Vol. xxx., No. 2. 'In Memoriam: John Wallace Baird.' **G. J. Rich**. 'A Study of Tonal Attributes.' [Experiments on pure tones (variators and interference-tubes). The pure vowels neither occur at the same point for all observers nor lie an octave

apart; judgments of vocality are made upon a perceptive and not upon an attributive basis. Pitch-brightness constitutes a single attribute. Volume is a true extensive attribute, and follows Weber's Law. Tonality (musical quality) may tentatively be given the rank of attribute.] **P. F. Swindle.** 'Some Forms of Natural Training to which Certain Birds are Subjected.' [Explains the group-frequencies of beak-cleaning (ravens) and galloping (goose-eagle) from the behaviour of the birds in seizing and tearing their prey.] **P. F. Swindle.** 'Analysis of Nesting Activities.' [Hypothetical schema of bird's nesting activities, in terms of the observed simpler movement-groups of a lizard; comparative observations of *Cariacus*. Discussion of relation between bodily activity and complexity of nest; relative utility (especially temporal position) of movements; simple and multiple nests; defence of nest.] **P. F. Swindle.** 'The Peristaltic-like Nature of Organic Responses.' [A study of tapping and grasping activities in man and lower animals shows that all muscular responses of long duration are discontinuous, in the sense that the nervous correlates of any given part of such response are not identical with those of any other part. This peristaltic nature of the activities permits the formulation of a law of muscular induction of the same order as the writer's previously published law of colour-induction.] **G. S. Hall.** 'Some Relations between the War and Psychology.' [(1) The war sends us back to first principles: why this reversion to primitive instincts? (2) Applied psychology has abundantly justified itself. (3) The war has raised special problems of feeling; (4) of mass psychology and mass pathology; and (5) of the unconscious. (6) America has made the greatest use of psychology in the war, but has borrowed all principles from Europe. The time is ripe for a new synthesis. (7) The true substitute for war is the conquest and control of nature by science and invention.] **F. Angell.** 'Duration, Energy and Extent of Reaction Movements: Simple and Flying Reactions.' [(1) The duration of the reaction-movement is constant, despite differences of extent, of initial tension against which the pull is made, of strength of pull, and of reaction-time. (2) The times of 'flying' reaction, in which the reaction-movement supervenes upon a gentle pull already in progress, are shorter than those of simple reaction, although the type is sensory and the movement slower; the reason is that the antagonistic muscle is already relaxed.] Book Review. Book Notes. Vol. xxx., No. 3. **H. S. Liddell.** 'Eye-Movement during Fluctuation of Attention.' [Experimental test of Ferree's hypothesis. There may be eye-movements during the phase of invisibility; there may be no distinguishable movements during fluctuation; movements may appear at random.] **H. J. Mulford.** 'What is "The Unconscious"?' [Reflex consciousness (momentary, with no before or after) and conscious consciousness use the same non-conscious machinery (the brain); but whether they clash or agree, we never perceive the unconscious at work.] **T. Schroeder.** 'The Psychologic Aspect of Free-Association.' [A chance set of free associations is used by the author to illustrate the latent content of dream and the point of view of psychoanalysis at large. To the psychoanalyst words are not symbolic of objects; they are symbols of the subjective symbolisation of related objective occurrences.] **A. A. Roback.** 'The Freudian Doctrine of Lapses and its Failings.' [Critical analysis of a number of instances of lapse. In such study, first, the words or sentences preceding and following should be examined; then, possible determining associations should be sought; only in default of cues from these sources may a new principle be invoked.] **W. T. Shepherd.** 'On Sound-Discrimination in Dogs.' [Dogs may discriminate pitches 3 octaves (perhaps, 1 octave) apart.] **Vincent.** 'Confessions of an Agoraphobic Victim.' [History of case and description of

subjective symptoms.] 'Minor Studies from the Psychological Laboratory of Vassar College.' **K. B. Graves, E. Heath, M. F. Washburn.** 'xxxvii. Directed Ego-centric Reactions.' [There is a noticeably greater number of free-association responses with proper names and pronouns in the case of observers who are especially prompt, when directed to do so, in recalling personal experiences.] **E. Morgan, H. K. Mull, M. F. Washburn.** 'xxxviii. An Attempt to Test Moods or Temperaments of Cheerfulness and Depression by Directed Recall of Emotionally Toned Experiences.' [There is correlation between exceeding or falling below the average number of pleasant associations on five successive days and the judgments of intimates regarding the subject's temperament.] **M. A. Walker, M. F. Washburn.** 'xxxix. The Healy-Fernald Picture-Completion Test as a Test of the Perception of the Comic.' [In general intensity of reaction and in appreciation of the pictures in their appropriate context, lower grade children surpass higher grade, and higher grade children surpass adults. Mere incongruity is most comic to the upper grade children.] **H. Baum, M. Litchfield, M. F. Washburn.** 'xl. The Results of Certain Standard Mental Tests as Related to the Academic Records of College Seniors.' [The substitution and cancellation tests show no correlation; the opposites and analogies tests show correlation, but do not decisively differentiate; the information test (number of new words) shows correlation, though some excellent students make poor records.] **M. F. Washburn.** 'A Note on the Terman Superior Adult Tests as Applied to Vassar Freshmen.' [The average judgment of instructors assigns about normal ability to the 'superior adults'.] **F. M. Kunkel and G. J. Rich.** 'Minor Studies from the Psychological Laboratory of William Smith and Hobart Colleges.' **L. Gibson, T. Hartman.** 'i. The Comparative Sapidity of Hydrochloric, Sulphuric and Acetic Acids.' [The sapidity of the two former acids depends upon their concentration in hydrogen-ions; acetic has a stronger taste than its ionic concentration would justify.] **G. J. Rich.** 'ii. The Daylight Mazda Lamp in the Psychological Laboratory.' [The lamp is dependable for class-instruction over the middle range of the spectrum, but is deficient in blue rays.] Book Reviews. Book Notes.

JOURNAL OF PHILOSOPHY, PSYCHOLOGY, AND SCIENTIFIC METHODS. xvi., 15. **S. Unna.** 'Bertrand Russell—Then and Now.' [A striking study of the psychology of a philosophic mind, which endeavours "to point out the very different implications in what is substantially one theory of knowledge, simply through a shifting of emphasis, a change of attitude". It is held that Russell's "early method was that of empiricism coupled with rigorous intellectualism" and "staunch faith in the ability of the mind to reach truth through relentless, rigid analysis". But in denying that "human values have a place in nature" and insisting that "therefore we ought to suspend judgment," Russell "left a value-judgment on our hands". His trend, however, was non-social and "toward intellectual individualism," which conceived thought as "a means of escape rather than an integral, organic part of experience". Now, however, he has become "interested in politics, economics, and education," and though "as much of an intellectualist as before," recognises that "the life of reason cannot bring health into the life of instinct, and this concreteness, this greater adequacy in dealing with the problems of this lesser world" is attributed to "the fact that Russell's method is now psychological rather than logical".] **W. C. Swabey.** 'Mr. Bradley's Negative Dialectic and Realism.' [Discusses "to what extent the destructive dialectic of the first book of *Appearance and Reality* . . . is really founded in logic" in the interests of 'Realism'. *Impar congressus*

Achilli.] xvi., 16. **A. C. Armstrong.** 'Philosophy and Political Theory.' [Was it Nietzsche, Fichte, Hegel, or Darwin who may be blamed for the war? No doubt "absolute metaphysics tends toward absolute politics, individualism toward liberal or radical views," but the personal circumstances of philosophers modify their views.] **J. E. Turner.** 'Dr. Strong's Panpsychic Theory of Consciousness and Perception.' [Criticises his account of 'essences,' and thinks he has not constructed 'a coherent panpsychic theory of knowledge'.] **D. Drake.** 'Panpsychism Again.' [Approves of the 'essences' but admits that "there may be a certain amount of illusion" about their given-ness—indeed any amount—and concludes by recommending Strong's books as "the keenest and completest argument for panpsychism."] xvi., 17. **J. R. Kantor.** 'Instrumental Transformism and the Unrealities of Realism.' [A careful and judicious explanation of the essential differences between instrumentalism, the old 'idealism' and the new 'realism'. "The instrumental movement represents one of the specific types of reaction to absolutism, which is slowly but persistently being forced out of philosophy. Among other reactions to absolutism, that known as new realism is characterised by the fact that it merely shifts the ground of the absolutism, and instead of conceiving reality as being behind experience, puts it into experience as absolute entities, relations or immutable laws. As over against this presentative realistic position, instrumentalism denies all absolutes, whether essences, relations, or laws," holding that "to assert the existence of any absolute thing or relation is to fly in the face of all scientific facts". For "instrumental logic is the method of science," and it is vain to attack it "because it cannot yield absolute reality," which is "an unsound fabrication".] **E. L. Schaub.** The Nineteenth Annual Meeting of the Western Philosophical Association. xvi., 18. **C. E. Ayres.** 'Thomas Hobbs and the Apologetic Philosophy.' [Hobbes, who is compared with W. G. Sumner, was decried by all parties because his theory implied the relativity of all social institutions, and so shocked all who, to defend the *status quo*, wanted to conceive them as absolute.] **R. B. Owen.** 'Teleology and Pragmatism.' [Comment on Warbeke in xvi., 8. "Because reality as known is teleological is no proof that reality as such is."] **E. E. Sabin.** 'Pragmatic Teleology.' [Points out that pragmatism is a wider term than humanism, and defends James in detail against Warbeke's criticisms.] xvi., 19. **A. H. Lloyd.** 'The Function of Philosophy in Reconstruction.' ["A sensuous realism, then, but qualified as a mediate realism and again as an immediate dualism is what I am disposed to regard as the logical philosophy of the present era."] **F. R. Bichowsky.** 'The Concepts of Class, System, and Logical System.' ["We wish merely to point out that logical systems exist, and that all logic and all science are necessarily examples of them, and also to point out that no purely extensional logic can account for the existence of logical systems or their properties, thus placing extensional logic in the uncomfortable position of not being able to account for the very characteristic, namely, that theorem unambiguously follows from postulate—which makes it a science at all."] xvi., 20. **H. C. Brown.** 'The Definition of Logic.' [Logics are descriptions of the best methods for arriving at the desideratum called 'truth' at various times and under various conditions, and differ accordingly. The logic we now require is one for investigation and this the instrumentalist logic provides. Realistic logic is based on a fixity of terms and relations which has been antiquated by Darwinism; it is "nothing but an extension of mathematics". Hence no definition of logic can be final. The present instrumentalist conception of logic, though at home in the region of applied science, "is naturally disquieting to the ultra-conservative, distasteful to the ethic

temperament, and resisted by orthodox theologians".] **A. Thalheimer.** 'Purpose.' ["The simple thesis that there is a purpose in organic and perhaps inorganic phenomena relies merely upon a description of the qualities the entities held to be purposive have in common and upon the assertion that purpose is a thing that is given in these qualities or that is to be inferred from them. It is a thesis that neither necessarily denies the existence of efficient causes nor offers a substitute for them." Hence final causes are scientifically 'harmless'. "If they exist they are no substitutes for efficient causes: yet if they exist, the concept of purpose has a place in science as well as in philosophy."] **F. C. S. Schiller.** 'Methodological Teleology.' [Replies to Warbeke in xvi., 8. (1) Teleology is not for pragmatism a metaphysical dogma but a methodological assumption, and one moreover which all philosophies must make, more or less openly. Nor is it more *ex analogia hominis* than causal explanation. (2) The supremacy of the Good over the Real and the True, similarly, only means that all questions are ultimately questions of values. But (3) the teleological sense of 'good' must not be confused with the ethical, nor must pragmatism be expected to set up an ultimate standard of good for every one, in disregard of the actual variations in the ends sought and the goods pursued by men at present.]

REVUE DE MÉTAPHYSIQUE ET DE MORALE. Mai-Juin, 1919. **G. Milhaud.** 'La question de la sincérité de Descartes.' [No serious question arises—if we exclude the very doubtful accusation of plagiarism over the law of refraction—except in the treatment of the earth's motion in the *Principes*. It seems at first sight that D. here invents a preposterous definition of proper motion in order to be able to reconcile a Copernican theory with a Ptolemaic mode of expression. Yet in the *Monde*, written before Galileo's condemnation, traces of the same sense of proper motion occur, and we may therefore presume that D. really believed it to be important.] **A. Raymond.** 'Sur une définition possible des ordinaux transfinis.' [First criticises Cantor's theory of transfinite ordinals by confusing ordinals with cardinals and speaking of them as 'having a power of cardinality' which diminishes as we move along the series. Then proceeds to erect a new definition of ordinals on this confusion. The author seems never to have heard of ordinal similarity nor to know that it is the basis of ordinal types. Quite worthless.] **É. Bourguet.** 'Sur la composition du *Phèdre*.' [Defends the dialogue against H. Raeder's accusations of incoherence. The first discussion on love represents the stage of mere guessing by its fundamental error and its imperfect form; the second, which at least starts with a definition, corresponds to the stage of false opinion backed by plausible argument; the third represents true opinion in the form of myth; and the rest of the dialogue represents the obtaining of genuine knowledge by dialectic. The whole is put together with exquisite skill.] **R. Lenoir.** 'La doctrine de Ravaisson et la pensée moderne.' [A description of R.'s philosophy, which was akin to Schelling's, elevates sentiment above analysis, and makes much play with æsthetic emotions though it gives but a conventional theory of aesthetics. Its only value for us is as a protest against too narrow a conception of thought; but R.'s is not the right remedy. 'Thought can become more supple . . . and it is not in the particular individual that the real becomes intelligible.'] **J. Nicod.** 'Le *Traité de Logique* de Goblots.' [G. attempts to define the laws of logic as the psychological laws of a pure intellect, and to define logical necessity by capacity for being universally believed. Both definitions are inadequate, and, when carefully analysed, become circular. He rejects relational propositions on grounds which seem to M. Nicod (and

the present abstractor) wholly inadequate. Goblot thinks erroneously that the logic of relations would split the science into two parts with nothing in common; he fails to see that there is much analogy between the logic of classes and that of relations, and that there is a form of syllogism appropriate to both. He also fails to see the important distinction between material and formal implication. Goblot rejects formal reasoning as sterile on much the same grounds as Mill. M. Nicod has little difficulty in refuting such arguments, but praises highly Goblot's criticisms of 'reasoning by recurrence' beloved by H. Poincaré. Goblot ascribes the fertility of deduction to a happy choice and combination, not of propositions, but of things or symbols. M. Nicod replies that at best this only describes a psychological process which often accompanies deduction, and that in any case 'we must not mix up concepts and ink-lines.' Goblot holds that induction involves determinism, but that the latter cannot be self-evident since many people believe in undetermined free-will. M. Nicod agrees with the latter but demurs to the former contention. Perhaps a belief in determinism is not logically necessary to induction (which at best can only give probable conclusions) but only psychologically necessary to induce observers to set to work.] **G. Mouret.** 'A propos de l'entropie.' [A correction of a misunderstanding by M. Selve of the author's view of entropy.] **E. Rignano.** 'Sur la méthode d'enseignement des mathématiques et des sciences pour la formation du futur maître.' [A plea for more concreteness in the teaching of natural science and of mathematics. Mathematical reasoning is really a series of very simple experiments and observations. The teacher should have a thorough grounding in a really honest and scientific psychology.] **G. Aillet.** 'La "force majeure" et la guerre.' [The legal notion of 'force majeure' cannot be satisfactorily defined either wholly subjectively or wholly objectively. If you only allow it to exist where no actual fault of the least degree can be assigned you make the obligations of debtors, lessees, etc., far too onerous. And on the other hand you make those of carriers, hotel-keepers, etc., far too light. If you pay no attention to the intentions and behaviour of the interested parties you reach equally absurd results; for a man might claim release from a contract simply because the discharge proved more burdensome than he had anticipated. Legal decisions in connexion with the war have cleared up the notion of 'force majeure' and show that the really relevant factor is the normal and rationally predictable variations in the conditions of a given industry. Variations beyond these limits constitute 'force majeure' and have to be met by altering the obligations of the contracting parties so that the risks do not fall unconscionably on one party or one class of contractors such as lessees or workmen. (A most able article like all the legal papers in this Review.)]

ZEITSCHRIFT F. PSYCHOLOGIE. Bd. lxxx., Heft 4, bis 6. **C. Buehler.** 'Ueber Gedankenentstehung: Experimentelle Untersuchungen zur Denkpsychologie.' [Experiments performed for the most part under Kuelpe's direction at Munich. The main series deals with "sachlich-logisches Beziehen und Zusammenfassen," as illustrated by the construction of sentences from isolated words. Four types of procedure are distinguished: (1) the analytical starts out from a comprehensive concept which is analysed by its relations, so that the parts are discovered in the whole; (2) the synthetic, on the contrary, builds up a term as principal term by discovering relations into which it may be brought, so that the whole is constructed from its parts. The result, in both these cases, is a combining (*Zusammenschluss*) of the words into a complex. (3) Another type ends with

a relation between two equally important complexes; the relation is the central feature. This procedure may again be called analytical, as distinguished (4) from a synthetical, in which the to-and-fro movement among numerous relations leads to the emergence of a principal relation, that was at best implicit until the construction was undertaken.] **J. Lindworsky.** 'Wahrnehmung und Vorstellung.' [There is no single attributive character whereby perception and idea may be distinguished. But the collocation of attributes may, in extreme cases, lead to a comparison, whose result is fixed in the form of absolute impression; presence of the causal stimulus and permanence (reality) may then serve as further indices of difference. This genetic explanation, in terms of secondary functions, is adequate to the various modes of illusion, as well as to the pathology of perception.] **H. K. Schjelderup.** 'Ueber die Abhaengigkeit zwischen Empfindung und Reiz.' [Starting from certain simple physiological assumptions, the author works out a theory of retinal adaptation and recovery (including the Fechner-Helmholtz law of negative after-images), and from this proceeds to a new metric formula which bears the test of experiment. The underlying ideas are akin to those of Lehmann.] **Literaturbericht.** Bd. lxxxi., Heft 1, bis 3. **H. Henning.** 'Experimentelle Untersuchungen zur Denkpsychologie. i. Die assoziative Mischwirkung: Das Vorstellen von noch nie Wahrgenommenem und deren Grenzen.' [This is the first of a series of experimental studies which are to set forth the psychology of thought and volition from the standpoint of associationism, apparently in close relation to the views of G. E. Müller. The method, which is novel, reduces in essentials to the following plan: a word is presented, and then after a variable interval a second word, whereupon the observer (under widely varying instruction) responds by a third word; the intervention of the pause and the presentation of the second stimulus-word secure the observation and report of many phases and stages of thought that have baffled the Würzburg experimenters. This instalment deals with associative mixture, the effects of which it classifies and illustrates in detail, and with the mechanism and limits of ideas of 'imagination,' in the sense of ideas whose phases or components have never been given together in perceptive experience. Under the latter heading are discussed ideas of sight (size, colour, appearance, and behaviour of a person, form, material of objects, movement), sound, touch, taste, and smell; the effect of contradictory instructions; attitudes and restrictions (*Fesselungen*).] **Literaturbericht.**

NOTE.

WHAT DOES BERGSON MEAN BY PURE PERCEPTION ?

MR. HARWARD says that his original note on this subject, in the April, 1918, number, was not intended as an attack on M. Bergson. I should like to say that my reply in the October, 1918, number was not intended as a defence of M. Bergson. Nothing could be much more absurd than that two independent critics should enter into a controversy as to the consistency or inconsistency of the thoughts or words of a contemporary writer to whom either can address a postcard. My intention was quite different, whatever impression I may have left on the reader. It really surprised me that anyone reading M. Bergson's *Matière et Mémoire* should have formed so different a notion of his theory of perception from that which I had formed, and my object was not to defend M. Bergson but to give my version of a doctrine which has always appealed to me as particularly luminous—I will not say lucid in view of Mr. Harward's very real difficulties. I do not propose to deal with those difficulties and obviously I could not in a few short sentences. I only wish, therefore, to add a word to my previous note suggested by the sentence in Mr. Harward's reply: "Memory is already rather hard worked in M. Bergson's system, but surely here we have got beyond the limit of its powers" (Oct., 1919, p. 469). The sentence is a challenge addressed to me, but its effect is to reveal to me, as in a flash, the whole difficulty and the difference between Mr. Harward's view and mine. I see now that our minds are directed on different problems. Mr. Harward wants to determine the nature of perception recognised as an isolated phenomenon. My problem, and I think Bergson's, is the relation of perception to memory. The classical philosophical doctrine is that memory is conditioned by perception and that perception is logically prior to memory; that perception exists independently in its own right, but that memory cannot so exist being dependent on previous perception. Bergson's theory, as I apprehend it, is that the exact converse is true. Memory is the fundamental fact of mind and perception depends on it. The theory may be wrong, I am not proposing now to defend it, but it seems to me clear that had Mr. Harward grasped it, he could not have written the sentence I have quoted. For Bergson there is no "pure" perception in the meaning of a sense impression which brings its own appert. Perception provides "a frame" into which memory inserts an image.

H. WILDON CARR.

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